



Aspects of Atypical Maternal Behavior Predict Accelerated Motor Skill Development in Infants

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INTRODUCTION

Recent advances in the field of attachment have revealed that mammals experience accelerated behavioral and biological development in ways that help them survive the hostile environment in which they live (Callaghan et al., 2014). This accelerated development is considered detrimental for the organism, as it can also be conceptualized as *accelerated aging*. Problematic parenting behaviors, including disrupted/disorganized forms of parenting such as extreme withdrawal and hostility, create considerable environmental adversity for infants because the parent is unable to effectively meet the child's basic needs. The present study examined whether environmental adversity in the form of problematic, atypical maternal behavior is associated with accelerated motor skill development among 1-year-old infants.

Research Aim:

It was hypothesized that negative, intrusive, and insensitive parenting behavior would predict more advanced motor skills in the presence of the mother.

METHODS

Participants

- 120 women followed from pregnancy through 2-years postpartum
- Mothers' age range: 18-42 years, $M = 26$
- 47% African-American, 36% Caucasian, 13% Biracial, 4% Other
- 64% single/never married, 28% married, 4% divorced, 4% separated
- 20% had a high school diploma or less, 44% some college, 36% college degree
- Median monthly household income = \$1500
- 73% receive services from WIC, and 76% have public health insurance

Measures

Atypical maternal behavior was coded by the first author from mother-infant free play interactions at 12-months using the Atypical Maternal Behavior Instrument for Assessment and Classification (AMBIANCE; Bronfman et al., 1999-2009). The five dimensions (affective communication errors, role/boundary confusion, fearful/disoriented, intrusive/negativity, and withdrawal) as well as the total overall AMBIANCE score were used. Inter-rater reliability was established with Dr. Bronfman; ICCs ranged from .70 to .94.

Procedures

Pregnant women recruited through posting of flyers in pregnancy agencies and community organizations. First interview took place during third trimester of pregnancy (T1, $n = 120$); subsequent interviews 3-months post-partum (T2, $n = 119$), 1-year postpartum (T3, $n = 115$), 2-years postpartum (T4, $n = 99$).

Observed infant motor skills in the mother's presence were coded from mother-infant free play interactions at 12-months using a coding system designed for this study. Infants were coded for the presence or absence of five skills: Pulls self up, stands assisted, stands unassisted, walks, and runs. Scores were summed to create a demonstrated motor skills total. Coders were blind to study hypotheses. Inter-rater reliability (ICC) was excellent: Coder 1: .909, Coder 2: .891.

Table 1

Inter-correlations Among Study Variables

	1	2	3	4	5	6	7
1. Affective communication errors	1						
2. Role/boundary confusion	.617***	1					
3. Fearful/disoriented	.327**	.317**	1				
4. Intrusive/negativity	.734***	.635***	.276**	1			
5. Withdrawal	.110	-.155	.434***	.004	1		
6. Total AMBIANCE	.760***	.659***	.655***	.733***	.391***	1	
7. Demonstrated motor skills	.264**	.117	-.079	.266**	-.037	.133	1
8. Infant age in days	-.010	-.116	-.076	-.193*	.022	-.140	.257**

* $p < .05$. ** $p < .01$. *** $p < .001$.

RESULTS

- Infant age (in days) is positively correlated with motor skill development ($r = .257, p < .01$).
- Of the AMBIANCE dimensions (Table 1, variables 1-6), only affective communication errors ($r = .264, p < .01$) and intrusive/negativity ($r = .266, p < .01$) are significantly, positively correlated with motor skill development.
- Multicollinearity issues prevented examining all dimensions of parenting behavior simultaneously, therefore, each model was analyzed separately.
- Regression results suggest that, when controlling for infant age, higher levels of maternal affective errors and intrusive/negativity predict more advanced infant motor development (see Table 2).

- **Infant age alone accounts for a significant portion of the variance in motor skill development, yet affective errors and intrusive/negativity each explain additional, significant portions of variance above and beyond infant age.**

Findings with affective communication errors

- Affective communication errors explain an additional 7% of the variance in infant motor skills.
- Affective communication errors involve extreme insensitivity and misattunement such as laughing when the infant is distressed and contradictory signaling.

Findings with intrusive/negativity

- Intrusive and negative maternal behavior accounts for 10% of the variance beyond infant age.
- This dimension includes frightening behaviors such as physical and verbal aggression and exerting excessive control over the interaction with the child.

Table 2

Regression Models with Infant Age and Parenting Behaviors Predicting Infant Motor Development

	Model statistics			Change statistics					
	<i>b</i>	<i>se</i>	$R^2_{adjusted}$	R^2 Change	<i>F</i> Change	<i>df</i> ₁	<i>df</i> ₂	Sig. <i>F</i> Change	
Model 1									
Infant age (in days)	.023**	.008	.057	.066	7.337	1	104	.008	
Affective communication errors	.252**	.086	.120	.071	8.474	1	103	.004	
Model 2									
Infant age (in days)	.028**	.008	.057	.066	7.337	1	104	.008	
Intrusive/negativity	.320**	.089	.153	.104	12.844	1	103	.001	

Note. Models were run separately to avoid issues of multicollinearity. Models with the role/boundary confusion, fearful/disoriented, and withdrawal dimensions were not statistically significant and are not provided here. * $p < .05$. ** $p < .01$.

DISCUSSION

- Results suggest that infants born into an environment with a caregiver who is consistently hostile and unable (or unwilling) to meet their needs for safety, protection, and closeness demonstrate more advanced motor skills during interactions with their mother.
- It is possible that this accelerated developmental process serves to help the child escape the mother due to the threat this type of maternal behavior poses to the child's survival.
- Results align with and extend existing research (e.g., Callaghan et al., 2014) suggesting that experiences in hostile environments are associated with accelerated development and accelerated aging, which is detrimental to the organism in the long-run.
- It is not yet known whether the motor development observed in the present study is truly accelerated and whether it is detrimental to the child. Future research is needed to further explore the long-term effect of accelerated motor development.
- This is the first known study to examine the impact of atypical parenting behavior on infant motor development; future research is needed to replicate and extend the results of the present study.

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