

Associations of Mother-Child Interactions with 1-year Language and Social Communication Gains in Toddlers with an Autism Spectrum Disorder

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Background

○ Social communication ability is one of the best predictors of outcome in children with autism spectrum disorders (ASD; Charman et al., 2005; c.f. Prizant & Wetherby, 2005).

○ Parenting style has been associated with language and communication gains in typically developing children (e.g., Dodici, Draper, & Peterson, 2003), developmentally delayed children (Harris, Kasari, & Sigman, 1996), and children at risk for language delays (e.g. Beckwith & Rodning, 1996, Landry et al., 1997).

○ Few studies examine parenting styles in children with ASD (Siller & Sigman, 2002; Van Ijzendoorn et al., 2007), perhaps due to the tragic history of parents being falsely blamed for their children's autism diagnoses.

○ Siller & Sigman (2002) reported that maternal synchrony predicted language gains in children with ASD. However their study had some limitations, including a small sample of children with very low IQ and, most likely, high autism severity, as they were recruited in the 1980s. Additionally, synchrony is a microanalytic measure that requires intensive coding, so may not be applicable to clinical settings.

Hypotheses

○ Observed parenting styles would be associated with gains in language in toddlers with ASD.

○ Severity of ASD symptoms would moderate the relationship between observed parenting behaviors and language gains.

Methods

○ Participants

- 59 mothers and their toddlers with a diagnosis of ASD.
- 76.7% male, 15% minority
- Enrolled in a longitudinal study when child was 18-33 months
- Diagnosis confirmed using the ADI, ADOS, and clinical review

○ Procedure:

- Parents and children were assessed at 2 time points, 1 year apart, either in their 1st and 2nd or 2nd and 3rd years of participation in the longitudinal study.
- In each year, parents were interviewed about their children's ASD symptoms and adaptive skills, parent-child interactions were filmed, and children were directly assessed with the ADOS and Mullen Scales of Early Learning.

Language Measures (Receptive & Expressive):

- Mullen Scales of Early Learning (Mullen, 1995)
- Vineland Adaptive Behavior Scales (VABS; Sparrow, Balla, & Cicchetti, 1984)

○ Parenting Measure:

- 7- to 12-minute mother-child interaction in child's first or second year
- Coded using the Parent Child Interaction Rating Scales (PCIRS; Sosinsky, Marakovitz, & Carter, 2004; Appendix 2).
- Used 3 composite scores: Cognitive Engagement, Sensitivity, and Detachment

• Data Analysis:

- Four regression models including the following steps: (1) the time 1 language measure; (2) child age; (3) nonverbal developmental quotient (NVDQ); (4) the 3 observed parenting variables.
- Twelve additional models examined interactions between autism severity and parenting behaviors (4 language measures x 3 parenting variables). In these models, symptom severity was entered as a 5th step, and the interaction between symptom severity and parenting was entered as a 6th step.

Descriptives

Table 1. Child Descriptives

	VARIABLE	Time 1		Time 2	
		Mean (SD)	Range	Mean (SD)	Range
	Child Age (mos.)	31.49 (7.10)	20-50	43.78 (7.21)	32-60
ADI Scores	Social Raw Score (RS)	17.59 (4.16)	8-25	16.60 (4.88)	8-26
	Communication RS (Verbal)	14.27 (3.50)	6-18	14.29 (4.01)	5-14
	Communication RS (Nonverbal)	11.21 (2.55)	5-14	11.52 (2.19)	7-14
	Stereotyped RS	5.02 (1.99)	1-8	6.33 (2.28)	1-11
ADOS Scores	Communication RS (% possible)	.45 (1.17)	.10-.80	.54 (1.19)	2-1.00
	Social RS	10.41 (2.93)	4-14	9.43 (2.67)	5-14
	Stereotyped RS	3.81 (1.47)	1-6	3.57 (1.85)	0-6
Mullen	Expressive RS	18.29 (8.81)	4-35	26.05 (9.72)	5-44
	Receptive RS	17.32 (7.79)	5-32	26.76 (9.41)	8-47
	VQD	54.88 (26.01)	14-115	67.17 (29.01)	15-136
	NVDQ	75.36 (17.9)	32-114	73.41 (23.77)	27-126
VABS	Expressive RS	35.76 (21.01)	11-110	66.30 (33.75)	12-132
	Receptive RS	22.42 (8.68)	3-37	30.14 (8.53)	10-44

Table 2. Parent Descriptives

	VARIABLE	Time 1		Time 2	
		Mean (SD)	Range	Mean (SD)	Range
	Maternal Age (yrs)	36.38 (4.47)	28.6-58.1	37.38 (4.47)	29.6-59.1
PCIRS	Sensitivity	-.006 (774)	-1.89-1.17	-	-
	Detachment	-.039 (755)	-.69-2.45	-	-
	Cognitive Engagement	-.033 (741)	-1.86-1.14	-	-

Results

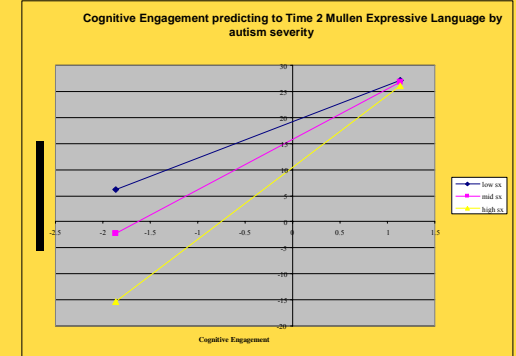
After controlling for Time 1 language scores, Sensitivity contributed unique variance to expressive language gains as measured by both the Mullen and the Vineland. Child age and Nonverbal developmental quotient also contributed unique variance to language gains.

Table 3. Linear regression models testing the predictive value of parenting to language gains.

	Outcome/Variable	Mullen Expressive Language		Mullen Receptive Language		Vineland Expressive Language		Vineland Receptive Language	
		β	ΔR ²	β	ΔR ²	β	ΔR ²	β	ΔR ²
Step 1	Child age	.02***	.022***	.02***	.022***	.02***	.022***	.02***	.022***
	NVDQ	.29***	.072***	.29***	.072***	.29***	.072***	.29***	.072***
Step 2	Sensitivity	.17*	.038*	.16	.036	.21***	.041***	.14	.031
	Cognitive Engagement	.10	.015	.10	.015	.08	.011	.13	.018
Step 3	Detachment	.04	.005	.04	.005	.04	.005	.04	.005
	Parenting	.02	.002	.02	.002	.02	.002	.02	.002

Results (cont.)

Figure 1. Cognitive Engagement interacted with symptom severity to predict Mullen Expressive gains. The relationship was strongest for children with high autism severity.



Discussion

○ Children of more sensitive parents made larger expressive language gains on the Mullen and the Vineland. Thus, parenting style contributed to both language and adaptive communication gains in toddlers with ASD.

○ Severity of ASD symptoms moderated the relationship between mothers' cognitive engagement and expressive language gains. The higher a child's symptom severity, the more the mother's cognitive engagement contributed to his or her language gains.

○ Findings were consistent with similar findings in studies of typically developing and developmentally delayed children, despite evidence showing that children with ASD develop language both qualitatively and quantitatively differently than children without ASD.

○ Results also support the idea that global parenting behaviors, which may be more readily assessed in clinical situations, are predictive of language gains in children with ASD.

○ These findings have implications for the development of novel supportive and preventive interventions for families raising toddlers at risk for ASD. Specifically, it appears important to include parenting as a target of early intervention efforts.

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