



A Longitudinal Ecological Examination of Predictors of Preschooler Language Development

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INTRODUCTION

Previous research has focused on factors at multiple system levels that impact language development in children, such as social support, parenting, and aspects of the home environment (Lugo-Gil & Tamis-LeMonda, 2008). Specifically, positive parenting plays a significant role in the development of infant language as it directly influences language, and possibly buffers the effects of risk factors such as few resources and poverty status. Studies have also shown that parental perceived social support decreases a parent's anxiety and increases involvement in activities with their young children, which are subsequently positively related to infant language development (Bee et al., 1982; Green et al., 2007). However, less is known about the impact of ecological factors, such as income, the broader home environment, and perceived social support, on children's language abilities in at-risk families.

Research Aim: To explore the longitudinal effects of multiple influences, such as maternal sensitivity, interactive reciprocity, economic resources, and perceived social support on preschoolers' language development from an ecological perspective.

METHOD

PARTICIPANTS:

Participants were 120 women recruited from the community through public locations, programs, and agencies serving primarily low-income families. The participants completed an interview during their pregnancy (T1), 3 months after pregnancy (T2), and when their child was 1- (T3), 2- (T4), and 3-years of age (T5). For the present study, women completed questionnaires at all waves. Maternal sensitivity and the home environment were observed and rated by researchers based on several home visits, and maternal behavior was video-recorded during a 10-minute free play interaction at T4. When children were 3-years of age, they completed an expressive and receptive language assessment. The interviews lasted approximately 3 – 3 ½ hours each. The women were compensated for their participation with cash or gift card and a baby gift at each visit.

- Mothers' Age at Study Entry: Mean = 26.2 (Range: 18-42, SD: 5.7)
- Child Sex: Male: 46%, Female: 54%
- Race/Ethnicity: African American: 47%; Caucasian: 36%; Biracial: 13%; Other: 4%
- Marital Relationship Status: Single: 64%, Married: 28%, Separated: 4%, Divorced: 4%
- Median monthly family income at study entry: \$1,500

Measures assessed at T3 (Age 1)

•*Observation of the Home Environment.* The Home Observation for Measurement of the Environment (HOME: Caldwell & Bradley, 1991) is an observation measure in which data are gathered regarding the quality of the home environment. Subscales include responsiveness, acceptance, organization, learning materials, involvement, and variety, all of which can be summed to give an overall total. Higher scores indicate a more positive, stimulating home environment. Coefficient alpha in this sample was .86

Measures assessed at T4 (Age 2)

•*Maternal Perceived Social Support.* The Perceived Social Support Scale (PSSS; Procidano & Heller, 1983) is a 40-item self report designed to measure perceptions of emotional support from friends (20 items) and family (20 items). Five additional items were added to assess for support related to caregiving/motherhood. The scale has high internal consistency ($\alpha = .92$) and demonstrated convergent validity. A total score was calculated with higher scores representing more perceived social support.

•*Maternal Sensitivity.* The Mini Maternal Behavior Q-sort (mini-MBSQ; Pederson, Moran, & Bento, 2009) is a 25-item card set that measures the quality of mother-infant interaction based on Ainsworth's concept of maternal sensitivity. Higher scores reflect greater maternal sensitivity as observed during the home visit

•*Shared Flat Affect.* Mother-child shared flat affect (adapted from Clark, 1985 and Feldman, 1998) was measured based on an observed and reliably coded 10-minute free play interaction between the mother and child. This scale measures the degree of similarity between the mother's and the infant's flat affect. It was coded along a 5-point scale. Higher scores reflect more shared flat affect between the dyad as observed during the home visit. Average intra-class coefficients = .72.

•*Reciprocity.* Mother-child reciprocity (adapted from Clark, 1985 and Feldman, 1998) was measured based on an observed and reliably coded 10-minute free play interaction between the mother and child. This scale measures the degree of matching between the mother's and infant's energy levels, interest levels, engagement and emotional states. It was coded along a 5-point scale. Higher scores reflect greater mother-child reciprocity as observed during the home visit. Average intra-class coefficients = .81.

Measures assessed at T5 (Age 3)

•*Receptive Language.* The Peabody Picture Vocabulary Test (PPVT; Dunn & Dunn, 2007) assesses the quality of receptive language in children as young as 2 years 6 months. The examinee selects the picture that best illustrates the meaning of stimulus words spoken by the examiner. This was completed by the participants' children in their homes.

•*Expressive Language.* The Expressive Vocabulary Test (EVT; Williams, 2007) assesses expressive vocabulary and word retrieval in children as young as 2 years 6 months. The examiner presents a picture and reads a stimulus question that the examinee must respond to with one word that provides an acceptable label for the picture. This was completed by the participants' children in their homes.

RESULTS

The quality of the home environment, social support, maternal sensitivity, and reciprocity were significantly correlated with expressive and receptive language scores in the expected direction. Shared flat affect was significantly negatively correlated with expressive language scores.

Hierarchical regression analyses were performed in order to determine longitudinal predictors of language development. Two multiple regression analyses were performed for expressive and receptive language, respectively.

Variables	Expressive Vocabulary				Receptive Vocabulary			
	R ²	ΔR^2	F for R ² Δ	β	R ²	ΔR^2	F for R ² Δ	β
Step 1: T3 HOME	.10	.10	6.38*	.32*	.07	.07	4.49*	.27*
Step 2: T3 HOME	.12	.02	1.04	.26	.12	.05	3.02	.16
T4 Social Support				.14				.24
Step 3: T3 HOME	.24	.12	8.95*	.06	.16	.05	3.23	.04
T4 Social Support				.11				.22
T4 Maternal Sensitivity				.41*				.26
Step 4: T3 HOME	.29	.06	4.24*	.06	.19	.02	1.40	.04
T4 Social Support				.14				.23
T4 Maternal Sensitivity				.38*				.24
T4 Shared Flat Affect				-.24*				-.15
Step 5: T3 HOME	.37	.08	6.64*	-.01	.29	.10	7.96*	.04
T4 Social Support				.13				.23
T4 Maternal Sensitivity				.30*				.23
T4 Shared Flat Affect				-.19				-.09
T4 Reciprocity				.31*				.36*

* $p < .05$.

DISCUSSION

Overall, results from this study revealed that factors at different system levels were important for early language development including quality of the home environment, maternal behavior, observed shared affect, and social support. However, when these predictors were considered together, maternal sensitivity and observed interactive quality between the mother and the child were particularly salient predictors of child language, especially expressive language skills.

Young children with a more positive home environment and a more attuned, sensitive and interactive mother will most likely be exposed to more verbal language and more stimulation from the environment. Mothers who demonstrate sensitivity during interactions may spend more high quality time with their children during these early years; they also may be more motivated to create a stimulating environment for the child leading to more advanced verbal abilities especially expressive language.

Other factors that potentially impact early language are also likely important, such as parental mental health, maternal romantic relationship quality, and number of current children in the household. It is important for future research to examine such factors.

Results of the present study suggest that predictors of a child's language development at age 3 can be identified as early as 1-year postpartum, and possibly even before then. A notable strength of the present study is the multi-method, multi-informant approach with a sample of high-risk families that were assessed over time.

These results support the need for interventions that focus on aspects of the environment that cross multiple system levels in order to promote early language development. For example, when implementing treatment for young children, it may be important to investigate contributing factors outside of parenting; however, direct interactions between parents and children may be most critical.

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