



Multisensory Attention Skills and Parent Language Input Predict Children's Vocabulary Across 12- to 18-Months of Age



Elizabeth V. Edgar, James Torrence Todd, & Lorraine E. Bahrlick
Florida International University

BACKGROUND

Diversity (quality) and amount (quantity) of parent language input to children is known to predict child vocabulary development (e.g., Hart & Risley, 1995). Multisensory attention skills (e.g., sustaining and shifting attention to speaking faces) are also considered a foundation for language development (Bahrlick & Lickliter, 2012) but have received less research focus. A newly-established individual difference measure, the Multisensory Attention Assessment Protocol (MAAP; Bahrlick et al., 2018), now opens the door to examining relations between early multisensory attention skills and later outcomes. Here, we examine the extent to which infant multisensory attention skills predict later language outcomes, along with more well-established predictors, including parent language input and maternal education.

METHOD

At 12- and 18-months, 99 children (49 females) from an ongoing longitudinal study participated. At 12-months, multisensory attention skills (intersensory matching, sustained attention, reaction time to shift) were measured using the MAAP. Trials begin with a 3-s central dynamic visual event, followed by two 12-s lateral events depicting two women speaking (see Figure 1). One woman speaks in synchrony with a centrally-presented natural soundtrack, and the other woman speaks asynchronously. For half of the trials, the central event remains on during the lateral events (high competition: the focus of this poster), providing overlapping stimulation similar to that of the natural environment. On each trial, intersensory matching (proportion of looking time to the synchronous lateral event), sustained attention (total looking time to both lateral events), and RT (latency to shift attention from the central to a lateral event) were calculated.

At 12- and 18-months, quantity and quality of child and parent language were derived from a lab-based parent-child interaction. The number of unique words spoken (quality) and the total number of words spoken (quantity) per minute were calculated. Expressive vocabulary was assessed at 18-months using the MB-CDI. Maternal education was used to index SES.

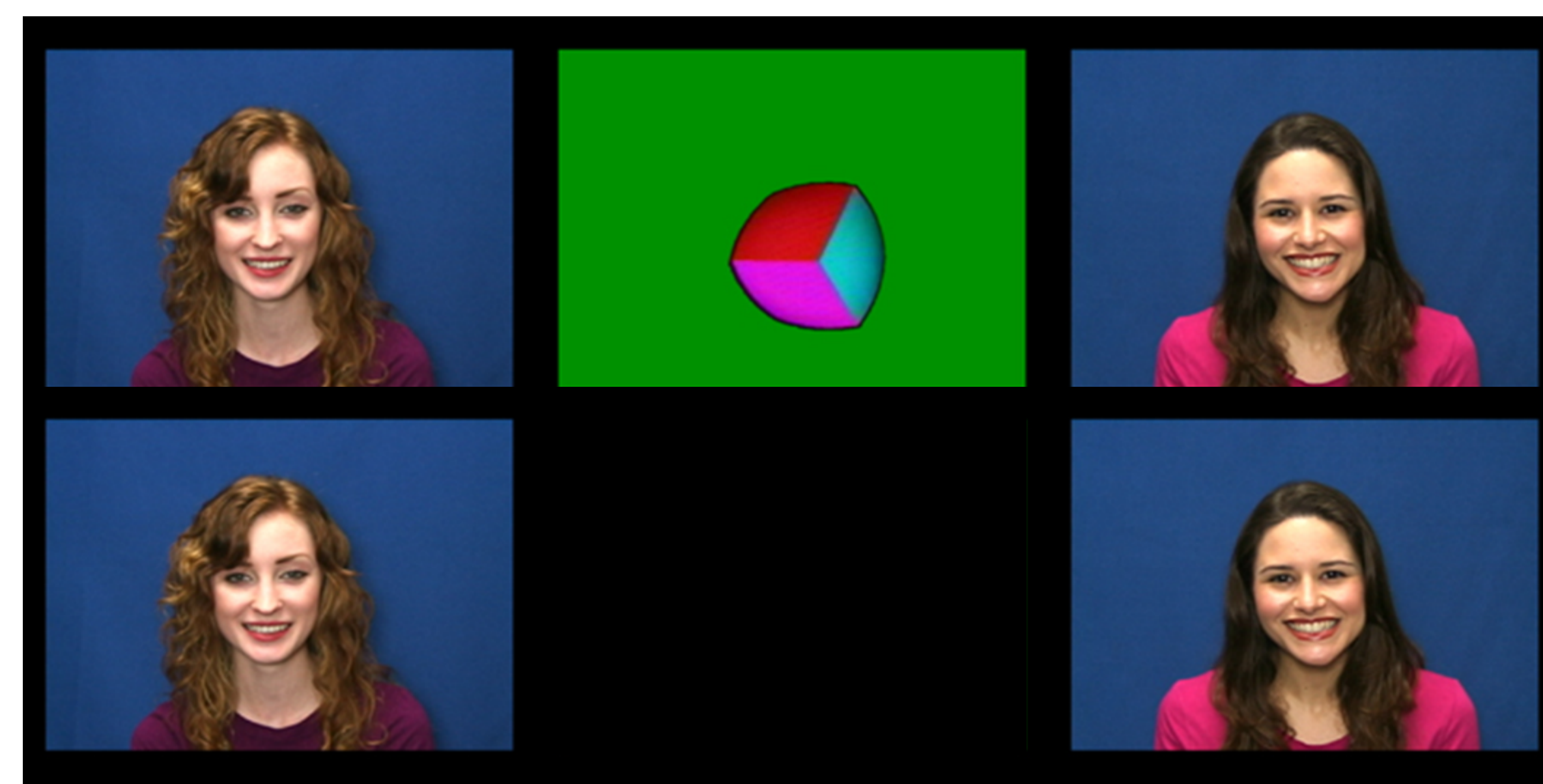


Figure 1. Still images depicting the dynamic social events on high competition (top) and low competition (bottom) trials in the MAAP.

RESULTS

Pearson's *r* correlations indicated that twelve-month intersensory matching (but not sustained attention or RT) predicted 18-month child quantity and quality of language, and expressive vocabulary ($p_s < .001$; see Figure 2 for example with expressive vocabulary). **Parent language quantity** at 12- and 18-months predicted 18-month child quantity and quality of language, and expressive vocabulary ($p_s < .01$). **Parent language quality** at 18 months (not at 12 months) predicted 18-month child quantity and quality of language, and expressive vocabulary ($p_s < .01$).

Excitingly, multiple regressions revealed intersensory matching at 12-months accounted for 28% ($p < .001$) unique variance in child language quality (total- $R^2 = 0.36$), 12% ($p < .05$) variance in child language quantity (total- $R^2 = 0.23$), as well as 22% ($p < .01$) variance in child expressive vocabulary (total- $R^2 = 0.30$) at 18-months, above and beyond other predictors (parent language quality and quantity, maternal education; see Table 1).

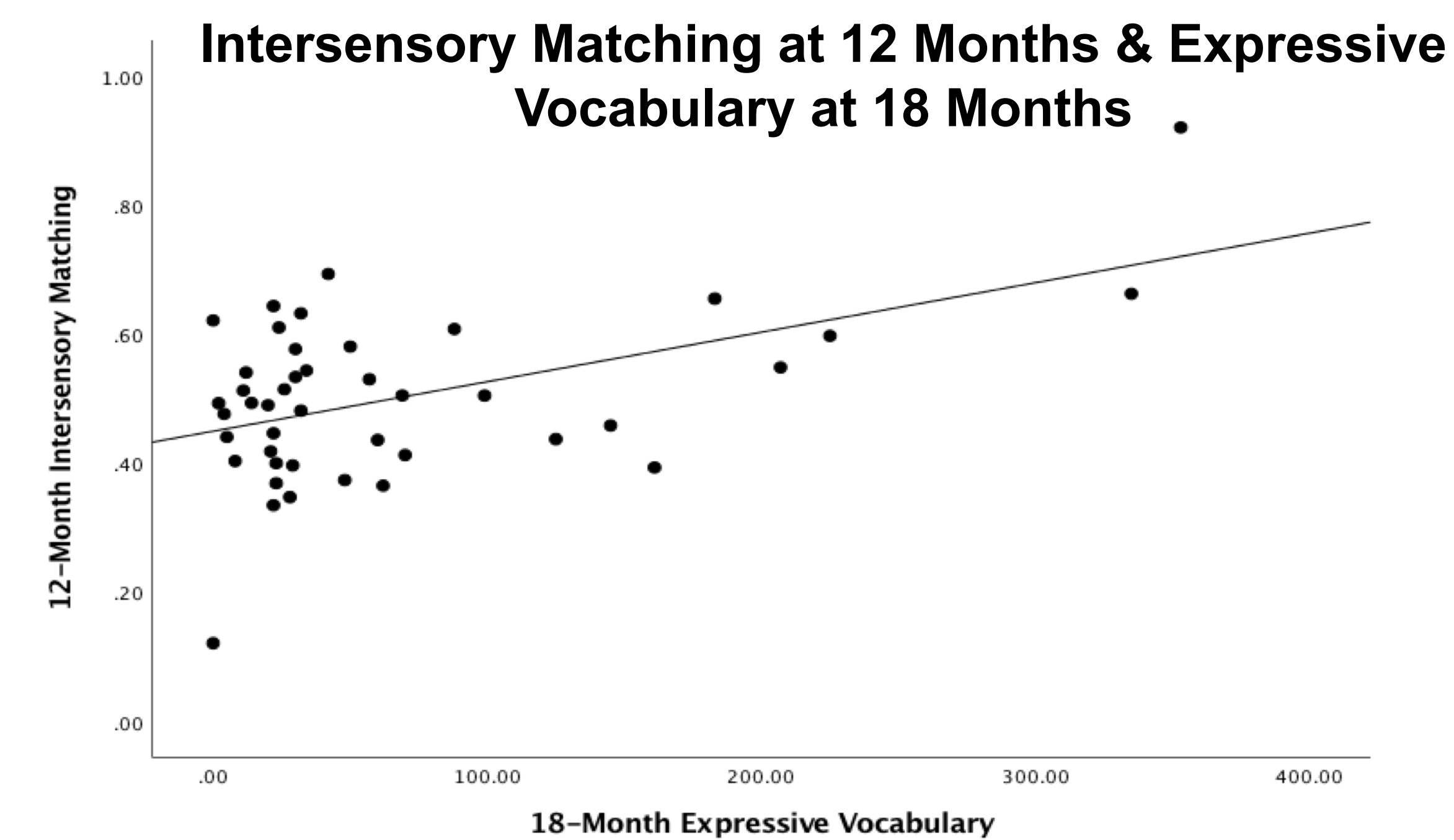


Figure 2. Scatterplot depicting relations between intersensory matching at 12 months and expressive vocabulary size at 18 months.

Predictors	18-Month Child Language Outcomes		
	Types	Tokens	Expressive
12 months			
Total R^2	0.36***	0.23*	0.30**
Intersensory Matching	0.28***	0.12*	0.22**
Maternal Education	0.08	0.04	0.03
Quantity & Quality	0.00	0.01	0.03
Sustained Attention	0.01	0.06	0.02

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Table 1. Change in R-squared from multiple regressions depicting unique variance contributions of 12-month intersensory matching in 18-month child language outcomes.

CONCLUSIONS

Intersensory matching, as early as 12-months of age, is an important predictor of later child language (diversity and vocabulary). Moreover, intersensory matching at 12-months predicted unique variance in child language (diversity and vocabulary, and to a lesser extent, quantity) over and above other well-established predictors, including parent language diversity and quantity, and maternal education. These new, exciting findings highlight the important role of infant multisensory attention skills in fostering language development into childhood.

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