Twenty-two infants (13 female, 9 male) were tested at 3 and 18 months. Interactions were recorded using the Language ENvironment Analysis (LENA) system. Automated counts of adult words and child vocalizations from LENA output were obtained and converted to per-minute rates. We thus assessed parent language input and child vocalizations across development in a short, lab-based interaction. A secondary goal of the present study was to longitudinally assess parent language input to 3-month-old infants has large downstream effects on the quantity of child vocalizations at 18 months, even when controlling for adult words at 18 months, \( b = .011, SE = .002, p < .001 \). Surprisingly, adult words at 3 and 18 months together accounted for 81.3% of the total variance in child vocalizations at 18 months, \( \beta_s = .49 & .48, ps = .002 \) for 3 and 18 months, respectively. Regression analyses revealed that adult words at 3 months remained a significant predictor of child vocalizations at 18 months, even when controlling for adult words at 18 months, \( b = .011, SE = .002, p < .001 \). Surprisingly, adult words at 3 and 18 months together accounted for 81.3% of the total variance in child vocalizations at 18 months, \( \beta_s = .49 & .48, ps = .002 \) for 3 and 18 months, respectively. Regression analyses revealed that adult words at 3 months remained a significant predictor of child vocalizations at 18 months, even when controlling for adult words at 18 months, \( b = .011, SE = .002, p < .001 \). Surprisingly, adult words at 3 and 18 months together accounted for 81.3% of the total variance in child vocalizations at 18 months, \( \beta_s = .49 & .48, ps = .002 \) for 3 and 18 months, respectively. Regression analyses revealed that adult words at 3 months remained a significant predictor of child vocalizations at 18 months, even when controlling for adult words at 18 months, \( b = .011, SE = .002, p < .001 \). Surprisingly, adult words at 3 and 18 months together accounted for 81.3% of the total variance in child vocalizations at 18 months, \( \beta_s = .49 & .48, ps = .002 \) for 3 and 18 months, respectively.

### Results

Average rates of adult words & child vocalizations (Table 1) did not differ between 3- and 18-months, \( ps > .10 \).

<table>
<thead>
<tr>
<th>Measure</th>
<th>Age</th>
<th>M.(SD)</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult Words</td>
<td>3 Months</td>
<td>42.1 (42.2)</td>
<td>0.00-196.0</td>
</tr>
<tr>
<td></td>
<td>18 Months</td>
<td>49.4 (28.6)</td>
<td>0.98-118.6</td>
</tr>
<tr>
<td>Child Vocalizations</td>
<td>3 Months</td>
<td>0.4 (0.3)</td>
<td>0.0-1.2</td>
</tr>
<tr>
<td></td>
<td>18 Months</td>
<td>0.7 (0.7)</td>
<td>0.0-3.0</td>
</tr>
</tbody>
</table>

Adult words per minute at 3 months were highly correlated with both adult words at 18 months, \( r = .58, p = .004 \) (Figure 2a) and child vocalizations per minute at 18 months \( r = .85, p < .001 \) (Figure 2b). Child vocalizations at 3 months were unrelated to all other variables (\( ps > .25 \)), and were therefore excluded from further analyses.

### Discussion

Results indicate that the quantity of parent language input to 3-month-old infants has large downstream effects on the quantity of child vocalizations at 18 months. This exciting finding may implicate child vocalizations as a mediator of the relation between parent input and children’s later vocabulary and cognitive development. Parents also showed striking stability in language input across a 15-month time frame. These findings highlight brief face-to-face interactions as fruitful contexts for assessing children’s language exposure and vocal production.

### References


