



Introduction

Our long-term goal is to create an early objective measure of language that does not rely on parental report or on overt responses such as pointing or speaking. This research validates a new version of the preferential looking procedure and explores its ability to reliably detect individual differences in lexical comprehension under the age of two. Intermodal preferential looking is a method that tests comprehension by presenting children with two stimuli and by recording where they look when one of the stimuli is requested. For example, infants might see a shoe and a car on a large video screen while a voice asks, "Where is the shoe?" Unfortunately, standard preferential looking does not correlate well with other measures of vocabulary, with most correlations with the MacArthur-Bates Vocabulary checklist ranging from nothing to .33, and most averaging about .12. This means that standard PLP is not the best means to evaluate the linguistic skill of any given child.

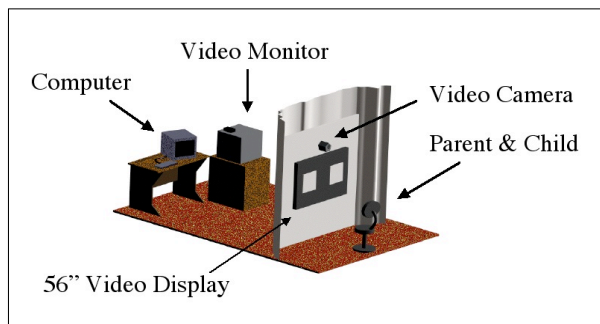
Modifications to Standard Preferential Looking

In the current modification, during each trial set, the requested object remains on the same side, only switching to the opposite side for following set. This avoids the difficulty youngest infants have with side switching (A-not-B errors), allows for shortened trials (3 seconds), and for high scores to indicate understanding. That is, we believe prior work has been doubly hampered because trials are often too long for the brightest infants, who become bored, and yet too short for the youngest infants, who need longer time to initiate a response, particularly one that is in a different direction from a previous response.

Participants

- 36 children (13.45-20 months of age) with no history of hearing or other developmental delays.
- Parents given MacArthur Bates Vocabulary Checklist (short form)

Method



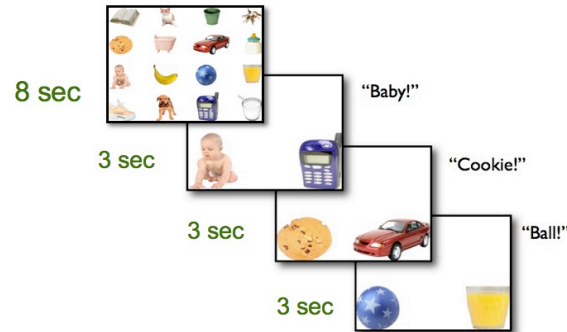
Setup. Children are seated on parent's lap in front of video screen where stimuli appears. Eye gaze of infants is recorded from hidden video camera.

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Procedure

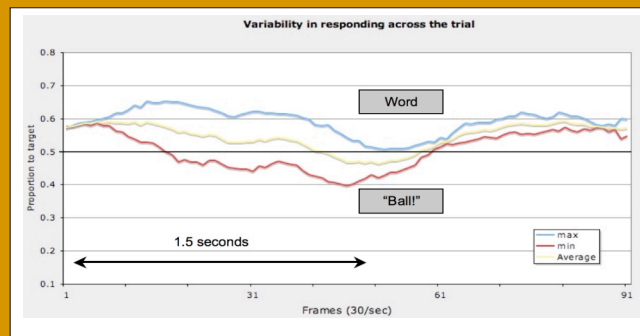
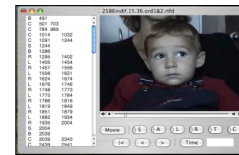


Children are shown a familiarization trial for 8 seconds with all 16 objects that will later appear.

Next, a pair of objects is shown for 3 seconds, 1.5 seconds into this viewing, one of the objects is requested. Then, the next pair of objects are shown. The requested object always is on the same side until the end of the trial set, then switches. There are 8 pairs per trial set, with a total of 4 trial sets.

Keeping the side constant creates an easier test on infants and allows for better measurement of response.

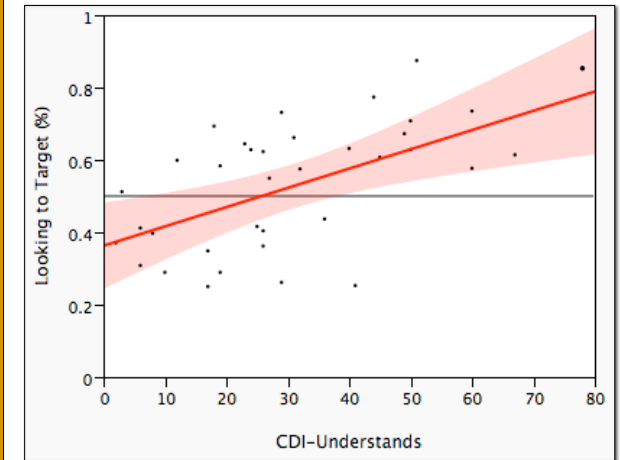
Coding. Eye movements were recorded during study and later coded frame-by-frame using Supercoder (Hollich, 2005)



Results

Children look to the requested object 53% of the time.

The graph shows how individual participants scores correlate with their reported vocabulary (how many words the child understands).



With 36 participants ranging in age from 13.45 to 20 months, the correlation is .58, $p = .0004$. This is statistically and practically significant. It means we account for 33.87% of the variance in scores. Thus, we know that if a baby looks to the requested object in our task they are also likely to have larger reported vocabularies.

Main Conclusions

An **objective measure of vocabulary skill** that is .58 correlated with CDI. (Accounting for 30% of variance -- 70% Better?)

New method for early detection of language problems and a new way to increase power of PLP method for future research

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