Infants Can Learn Decontextualized Words Before Their First Birthday

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Can infants below age 1 year learn words in one context and understand them in another? To investigate this question, two groups of parents trained infants from age 9 months on 8 categories of common objects. A control group received no training. At 12 months, infants in the experimental groups, but not in the control group, showed comprehension of the words in a new context. It appears that infants under 1 year old can learn words in a decontextualized, as distinct from a context-bound, fashion. Perceptual variability within the to-be-learned categories, and the perceptual similarity between training sets and the novel test items, did not appear to affect this learning.

Children generally produce only a handful of words, if any, before their first birthday (e.g., Bates, Bretherton, & Snyder, 1988; Fenson et al., 1994; Nelson, 1973). These words often denote familiar, specific referents of high relevance to the individual (e.g., Clark, 1993; Huttenlocher & Smiley, 1987) and are usually context bound. For example, a child may produce the word car only from a particular viewing position (Bloom, 1973; see also examples in Barrett, 1986; Bates, Camaioni, & Volterra, 1975). Thus, an inventory of English-learning infants’ spoken words at 12 months may include words such as car, bath, and dog (e.g., Fenson et al., 1994), many of which are present in the lexicon only because they refer to items of specific relevance to individual children and which are uttered only in certain situations (Barrett, 1985). Both diary studies of infants (e.g., Barrett, 1986; Benedict, 1979) and maternal checklist studies examining word use by large numbers of children (e.g., Fenson et al., 1994) suggest that infants’ early word learning is strongly determined by their affective environment (Dore, 1983; but see Bates, Benigni, Bretherton, Camaioni, & Volterra, 1979; Caselli et al., 1995; Harris, Jones, Brookes, & Grant, 1988; Stoel-Gammon & Cooper, 1984).

Can infants below age 1 year learn words that are not tied to specific contexts? Bloom (1993) has distinguished between earliest words, which depend on context for their recognition, and later words, which are “attached to more clearly defined concepts of objects and events that have been abstracted out of those original episodes” (p. 108). Bloom’s position resembles that of Piaget, who thought that “an early word like ‘mommy’ [may] signify (among other things, depending on the context), not a class of objects, but simply that the child wants something” (Flavell, 1963, p. 155).

In this article, language learning is viewed from the perspective of comprehension, which usually occurs before word production in typical development (e.g., Benedict, 1979; Clark & Berman, 1984), in language delay (Gibson & Ingram, 1983), and in apes (Savage-Rumbaugh, McDonald, Sevcik, Hopkins, & Rubert, 1986). In particular, I focus on learning names for things. Of course, infants learn more kinds of words than this (see Bloom, Tinker, & Margulis, 1993). However, parents and scientists consider learning names for things to be an important skill. This study addressed whether parents’ ostensive labeling can modify their child’s vocabulary before the first birthday. In particular, I teased apart the effect of hearing a word in the input from the child’s intrinsic interest in the thing the word stands for. To assess whether infants can learn specific words and to extend this knowledge to new contexts, two lists of words were used, and a separate group of infants was trained with each set: Comparison between these groups made it possible to separate the pure effect of exposure from other effects.

An additional factor of interest concerns the variability of the set of to-be-learned referents. Some...
names (e.g., ball) refer to objects whose perceptual similarity across exemplars is high; others (e.g., dog) refer to objects whose perceptual similarity is lower. The variability of perceptual similarity of a category is known to affect its learning by infants (Quinn & Eimas, 1996). I examined whether word learning was affected by the perceptual similarity of the things the words stood for.

To determine the ability of children to learn meanings of words beyond highly context-bound early words such as car when looking out of the window, I used the intermodal visual preference procedure (e.g., Golinkoff, Hirsh-Pasek, Cauley, & Gordon, 1987; Schafer & Plunkett, 1998; Thomas, Campos, Shucard, Ramsay, & Shucard, 1981). This method tests receptive ability and satisfies criteria for word meaning derived by L. Bloom (1993), P. Bloom (2000), and Dore, Franklin, Miller, and Ramer (1976).

Method

Participants

Participants were recruited from a departmental database or by advertisement in the local press. Parents were contacted initially by telephone. Of 61 infants recruited, 7 failed to attend testing, 1 failed to complete the experiment, and data from 1 could not be used because of experimenter error. The final sample had 25 females and 27 males, whose mean age at enrollment was 8.9 months (SD = 0.3, range = 8.5 to 9.5 months). All infants were in good health and were raised in lower-middle-class or middle-class White households. English was the sole language of all parents, with the single exception of one father who spoke Swedish and English to his child. Infants were randomly assigned to one of three groups matched for age, sex, and parents’ socioeconomic status. Two experimental groups were exposed to the training materials between 9 and 12 months, differing only with respect to the words used in training. The third control group had no exposure to the training materials.

Materials

The two experimental groups were trained on eight words (one received training with Set A words: apple, ball, cup, duck, fish, hat, keys, socks; the other received training with Set B words: bird, book, car, chair, coat, dog, shoes, toast). Word lists were of comparable age of acquisition by North American infants (M = 12.9 months for both lists, according to Fenson et al., 1994).

Training stimuli. Infants in the experimental groups were provided with simple board books and picture cards, showing color photographs on white backgrounds. Eight books each depicted a single category, with a different exemplar on each page; two books showed pairs of different objects on each spread; and two books depicted all six exemplars of a given category on each spread. Photographs varied in color and shape; orientation of objects was canonical. The 48 picture cards presented the same images as in the books, with one image per card.

To examine the effect on infants’ learning of variability in the training set, a measure of similarity between images was required. To obtain this, adults viewed pairs of images of the same object and were asked to give a similarity rating ranging from 1 (minimum) to 9 (maximum). Sixteen adults viewed Set A images, and 16 viewed Set B images, in all possible combinations of the seven images for each category (six training, one test). Data were used later in the analysis of infants’ responses.

Testing stimuli. The instrument for testing vocabulary at 9 and 12 months was based on Part I, Section D, of the Infant MacArthur Communicative Development Inventory (Fenson et al., 1994) adapted for U.K. English (Hamilton, Plunkett, & Schafer, 2000).

During a test trial, infants were shown a novel exemplar from Set A on one monitor and a novel exemplar from Set B on the other. The same pairings, matched for their functional properties, were used with every participant (Table 1). One female speaker, unknown to the infants, produced all auditory stimuli. A single recording was used for each utterance.

Procedure

Training. Parents in the experimental groups undertook simple activities four times per week for 10 min on each occasion (Table 2). They were given free choice of when and where the activities were undertaken. Training activities reflected commonly occurring home activities in a context of simple naming, pointing, and sorting. Parents were encouraged to give positive feedback.

Testing. Children in all groups were tested using the intermodal visual preference procedure in two experimental blocks. In the first block, infants were presented with pairs of images, and heard a nonreferential prompt: “Look! Look! What’s that?” Onset of the first “Look!” was 1,000 ms after the images appeared, onset of the second “Look!” was
2,100 ms after the images appeared, and onset of “that” was 3,500 ms after the images appeared. Presentation of the auditory stimuli in the second block was closely matched to this pattern: Onsets of target words were 1,000 ms, 2,100 ms, and 3,500 ms after the images appeared. In both blocks, trials terminated after 6 s.

Each image pair was presented twice in the first block: once with a given image on the left and once with it on the right. This approach was repeated in the referential block for each of the two auditory stimuli used with that pair (e.g., “Fish! Fish! Look at the fish!” and “Dog! Dog! Look at the dog!” for the fish–dog pair). There were 16 trials in Block 1 and 32 trials in Block 2. These were presented in a different order to each infant.

### Summary of Testing Approach

The method used in testing adopted the following constraints: (a) infants were each tested with the same auditory and visual tokens of the words and images; (b) the test images were novel exemplars of the to-be-learned words; (c) words were spoken by a voice the infants had not previously heard; (d) contextual cueing by the familiar home environment was removed; and (e) orienting to the named image was measured over and above nonreferential orienting, as recommended by Behrend (1988) and Reznick (1990).

### Results

#### Reliability

Tapes were scored twice by one experimenter for looks to the left, and twice more for looks to the right. In addition, all 48 trials for a random 10 participants (20%) were scored by a second experimenter. Intra-class correlation between scorers for net looking to one side over the other was .991.

#### Parental Report of Vocabulary

A two-way (Group × Time) mixed model analysis of variance (ANOVA) was performed on total reported receptive vocabulary scores. Vocabulary scores increased significantly over the 3 months between questionnaires, $F(1, 49) = 67.5, p < .001$. There was no reliable effect of group, $F(2, 49) = 0.20, ns$, or any Group × Time interaction, $F(2, 49) = 1.10, ns$. Infants’ knowledge of particular words is shown in Figure 1 and strongly suggests that, in the minds of the parents at least, the infants in the study were learning the words in the training materials: Infants trained with Set A words (Group A) showed a disproportionate increase in Set A words, $t(16) = 4.3, p < .001$; infants trained with Set B words (Group B) showed a disproportionate increase in Set B words, $t(15) = 3.3, p < .005$; and the control group (Group C) showed no difference between word sets.

There are two reasons parents may report learning of the words in the training set. First, the training may have been successful. Second, and less interesting, focus on particular words in the training groups may have sensitized parents to these words, so that, irrespective of the actual lexical status of these words, infants were more likely to be reported to know them. Furthermore, parentally reported word knowledge might rely on context-bound comprehension and thus cannot offer a robust test of

### Table 1

<table>
<thead>
<tr>
<th>A picture</th>
<th>B picture</th>
<th>Functional property</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fish</td>
<td>Bird</td>
<td>Animals</td>
</tr>
<tr>
<td>Duck</td>
<td>Dog</td>
<td>Animals</td>
</tr>
<tr>
<td>Cup</td>
<td>Book</td>
<td>Household items</td>
</tr>
<tr>
<td>Socks</td>
<td>Shoes</td>
<td>Clothing</td>
</tr>
<tr>
<td>Hat</td>
<td>Coat</td>
<td>Clothing</td>
</tr>
<tr>
<td>Ball</td>
<td>Car</td>
<td>Toys</td>
</tr>
<tr>
<td>Keys</td>
<td>Chair</td>
<td>Household items</td>
</tr>
<tr>
<td>Apple</td>
<td>Toast</td>
<td>Food</td>
</tr>
</tbody>
</table>

### Table 2

<table>
<thead>
<tr>
<th>Weeks</th>
<th>Activity name</th>
<th>Activity description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – 12</td>
<td>Name and point</td>
<td>Parents asked to name picture child is fixating or to point to image and name it.</td>
</tr>
<tr>
<td>5 – 9</td>
<td>Play and tell</td>
<td>Parents asked to tell stories using the cards.</td>
</tr>
<tr>
<td>10, 12</td>
<td>Sorting</td>
<td>Parents asked to place three cards from each of two categories face down, to expose them in turn, and to place in appropriate piles by category.</td>
</tr>
<tr>
<td>11</td>
<td>Odd one out</td>
<td>Parents asked to scatter three pictures from one category and one from another, and ask child, for example, “Let’s find the hat.”</td>
</tr>
</tbody>
</table>
decontextualized understanding. The experimental procedure was designed to test infants’ decontextualized comprehension more objectively than by parental report.

**Laboratory Tests**

*Overall approach to testing.* Three factors determine preference for one image over another one in this study: (a) one image may be inherently more interesting than the other, (b) prior exposure may alter the preference for the image from the category seen in training, (c) there may be an effect of the match between one of the images and the word presented. In the following analyses I investigate the strengths of these different effects.

As described earlier, in each trial an image from Set A was paired with an image from Set B. The first block established infants’ relative preference for Set A images over Set B images in the absence of referential input (Figure 2). In the second block, infants’ fixation of images was measured in the presence of referential input (Figure 3; note the change of ordinate from Figure 2). The difference in response between Block 1 and Block 2 equates to the preference for the image that can be ascribed to hearing its label: This measure is termed the *lexical response.*

*Inherent interest of images.* To establish whether one set of images is inherently preferred over the other, the best estimator is the control infants’ responses in Block 1. This is the only measure uncontaminated by prior exposure during training. Inspection of the rightmost bar in Figure 2 suggests that these infants may have preferred to fixate Set B images over Set A images, but the effect is not reliable, $t(18) = -1.14, \text{ns}.$

*Effect of prior exposure on visual preference.* The best estimator of the effect of prior exposure on visual

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**Figure 1.** Parental report of words known (maximum response $= 8$).

**Figure 2.** Net preference for Set A images in Block 1 (no referential stimulus).

**Figure 3.** Net preference for named images in Block 2 (where infants heard a referential auditory stimulus).
preference is the difference in Block 1 between the groups trained on the two different sets of words. This controls for any inherent preference for one set of images over the other. Comparison of the two leftmost bars in Figure 2 suggests that, in the absence of referential input, infants in Group A, who had been trained with Set A images, preferred set B images, and infants in Group B, who had been trained with Set B images, preferred Set A images. This suggests a novelty bias, in which the various categories in the two sets have been encoded by the infants so that although a novel exemplar is presented to them, there is an effect of prior exposure to the category (cf. Balaban & Waxman, 1997). Parametric analysis of this comparison revealed a nonsignificant trend, \( t(31) = 1.28, p = .21 \) (two-tailed), whereas a nonparametric analysis was marginally significant, \( U(17, 16) = 83, p = .056 \) (two-tailed), suggesting that training with the images may have resulted in category formation.

Tests of comprehension. In Block 2, in which infants were instructed to fixate a particular image, both experimental groups looked reliably longer at the named images, \( t(16) = 2.7, p < .01 \), for infants trained with Set A images; \( t(15) = 1.8, p < .05 \), for infants trained with Set B images, though the control group did not look reliably longer, \( t(18) = 0.55, p > .25 \) (all one-tailed; see Figure 3). To assess whether trained words have been learned, however, it is necessary to determine responses to the verbal prompt, specifically for the words on which infants were trained.

Figure 4 shows the added instantaneous probability of fixation of the named image as the trial unfolds, derived by calculating the preferences for the named image in Block 2, in 100-ms time slices, and subtracting the relative preference for the target image, taken from Block 1. Infants in the experimental groups showed added fixation of the named image, \( t(32) = 3.16, p < .005 \), ascribable solely to hearing the directive auditory stimulus, whereas controls did not, \( t(18) = 0.55, ns \). The difference is reliable, \( t(30) = 1.72, p < .05 \) (one-tailed, equal variances not assumed). I conclude that only the experimental groups showed reliable responses to the lexical stimuli.

Figure 5 shows the infants’ responses by training group and word set. It appears that Set A words received stronger responses than did Set B words. To measure the effect of training, I needed to establish whether responses to the words at test varied according to the group to which infants had been assigned. The relevant planned comparisons compare the lexical response for the group trained on a word set with the lexical response for the other two groups. For Set A words, the planned comparison was marginally significant, \( t(49) = 1.55, p = .064 \) (one-tailed). For Set B words, the planned comparison was significant, \( t(49) = 1.74, p = .042 \) (one-tailed).

Whether lexical response varied between trained and untrained words was further checked in an item analysis. Lexical response was elevated by an average of 348 ms per trial for infants who had been trained on an item compared with those who had not. This difference is reliable, \( t(15) = 2.53, p < .05 \), Wilcoxon \( T(16) = 27.0, p < .05 \). In an item analysis the responses of the control group can also taken into
account. Experimental infants’ lexical responses to a given word can be netted off against those of control infants, who had no training. Figure 6 shows the itemwise lexical response to words in each set, with control infants’ responses subtracted. The interaction is marginally significant, $F(1, 14) = 3.94, p = .067$.

Role of category variability in word learning. The adult study yielded data on (a) within-category visual similarity of training images and (b) within-category visual similarity of test images to the trained images (Table 3). To check for differences between word sets, $2 \times 2$ mixed model ANOVAs were conducted for the similarity data and for the standard deviations of the similarity judgments, with word set as the between-subject factor (Set A, Set B) and comparison (training set, training to test) as the within-subjects factor. For similarity, there was a marginal effect of comparison, $F(1, 14) = 3.65, p = .077$, but no effect of word set and no interaction. For variability, there was also a marginal effect of comparison, $F(1, 14) = 3.22, p = .094$, but no effect of word set and no interaction. These results suggest (a) there was no difference between word sets in terms of either the similarity or variability within the training set, or the similarity or variability of the test items to the training items, and (b) for both word sets, the mean similarity within the training items was marginally greater than the similarity of the test items to the training items. Because similarity and variability produced similar results, only similarity is considered further. To investigate whether individual words had differing levels of similarity from one another, $2 \times 8$ ANOVAs were conducted for each word set, with type of comparison (within training; train to test) and word (individual words) as factors. In each case there was a reliable effect of word, but no effect of comparison and no interaction: Set A, $F(7, 152) = 5.21, p < .001$; Set B, $F(7, 152) = 4.50, p < .001$. Thus, for individual words the within-training similarity was not different from the train-to-test similarity. In fact, across words, training similarity correlated with train-to-test similarity ($r = .59, p = .017, N = 16$).

Figure 7 shows visual similarity and variability data in terms of the additional lexical response when the word was trained compared with when it was not trained. For example, the stimuli depicting the apple item had a lexical response (Block 2 response minus Block 1 response) of 1,118 ms from Group A, who had been trained with it, and – 296 ms from Group B, who had not. The additional lexical response as a result of training is therefore 1,414 ms for this item. Adults rated the apple items as having a mean similarity within training set of 6.12 ($SD = 1.04$) and the test item as having a mean similarity to the test items of 5.81 ($SD = 1.42$; Table 3). It appears that training had an effect for most items. However, despite the variability in the training stimuli, there was no effect of similarity on the responses plotted in Figure 7.

![Figure 6. Itemwise lexical response to words in each set over and above controls’ responses.](image-url)
Discussion

Only infants trained with the words in the study oriented to the images named. It appears that a set of specific words can be taught to children below age 1 year so that they do not need contextual support to recognize them. Various controls help make this inference secure. First, the visual targets were novel exemplars of the categories; therefore, recognition of the test images could not rely simply on detection of a match between the test image and any previously seen image. Second, participants had not heard the test voice before they entered the laboratory: Success in the task thus required some degree of abstraction of the heard word to a stored representation of the target category’s label. Third, there were minimal extralinguistic cues to correct selection of the target: Gesture, eye gaze, familiar environment, and word-specific context were not available as cues to infants. Fourth, the measure adopted controlled baseline preference for the images: The key dependent variable was infants’ looking at the matching image over and above the extent to which they had oriented to it when it was presented in similar circumstances but with no referential prompt. Fifth, the images were of categories not likely to be context bound (cf. Barrett, 1995).

Two forced-choice word–object recognition matching, as used in the present study, is within the capabilities of several nonhuman species, including bonobo chimpanzee (*Pan paniscus*), African grey parrot (*Psittacus erithacus*), and domestic dog (*Canis familiaris*; Kaminski, Call, & Fischer, 2004; Pepperberg, 1993, 1999; Savage-Rumbaugh et al., 1993). Indeed, bonobo and parrot can outperform 1-year-old humans in many linguistic tasks. It is therefore tenable that infants’ abilities demonstrated here might represent an ontological dead end not related to further language development. This remains an open question. However, it appears that infants below 1 year can learn word meanings from their parents even when these words are selected not to have, a priori, any particular significance for them. The words were clearly learned in a manner not context bound in the sense outlined in the Introduction. Thus, the theory outlined by Barrett (1995), that before about 18 months children are limited to context-bound words, social-pragmatic words, and affect expressions, is not supported by these data (see also Dore, 1985; Kamb, 1986; McShane 1980; Nelson,
1983). Relatedly, many theorists have considered the rapid progress in word production often seen at the end of the child’s 2nd year and concluded that it is caused by the attainment of an insight about language (e.g., Corrigan, 1978; Dore, 1978; Golinkoff, Mervis, & Hirsh-Pasek, 1994; Gopnik & Meltzoff, 1987; Kamhi, 1986; McShane, 1979; Woodward & Markman, 1998). The results reported here are not consistent with this approach, nor with much of the traditional literature in cognitive development (Piaget, 1954; Vygotsky, 1962).

What can be made of control infants’ failure to respond to the stimuli? Previous work has shown that 12-month-olds do not orient to named referents, even when their parents report that the infants know about them (Behrend, 1988; Golinkoff et al., 1987; Thomas et al., 1981). In contrast, 13-month-olds can learn new words rapidly (Woodward, Markman, & Fitzsimmons, 1994). The notion that 12-month-olds are on the cusp of more robust responding seems plausible given the responses seen in Figure 5: Untrained infants appeared responsive for Set A words but not for Set B words. This difference is likely because of some unanticipated differences between the word sets.

The overall negative finding for responses in the control infants can help decide between two contrasting views of the training procedure. In one view, perhaps labeled skeptical, training might be seen as simply conditioning infants to look at isolated images on white backgrounds in response to a matching label auditory cue. This view emphasizes the similarities between the training and testing contexts, and deemphasizes infants’ linguistic accomplishment. In a second view, training and testing contexts are interpreted as different, and parents in the study are seen as having successfully trained infants’ understanding of words. The data in Figures 5 and 6 argue against the former view: Responses to untrained words in the experimental groups were much the same as those of the control infants, who had received no training at all. Had testing simply measured conditioning between the presentation methods of the items at training and test, experimental infants would have outperformed controls on all words, not just those that were trained.

Notwithstanding the conclusion just reached, I should note that although the situation changed radically, the stimuli were not unrelated to the training stimuli. For example, both were canonical views on a white background. And, of course, situational cues were preserved, most notably, the presence of a caregiver. But on balance, much changed from training to test—in particular, the setting, presentation mode of the images, social context, voice used, and auditory and visual tokens. The relative importance of these diverse cues remains to be explored in future research.

What function did the training regime perform? Training may have promoted learning in three ways: (a) by encouraging early development of categories, (b) by exemplar-based repeating of the mappings between word and object, and (c) by fostering joint attention to the word–object relationships. I look briefly at these in turn.

Early Development of Categories or Concepts

Gopnik and Meltzoff (1987) have argued that the ability to name objects efficiently is related to the ability to form two distinct categories (but see Gershkoff-Stowe, Thal, Smith, & Namy, 1997). Twelve-month-olds, it is argued, are poor word learners because they cannot categorize. Although no specific test of exhaustive sorting was conducted in the present study, the age of the infants makes categorization, as discussed by Gopnik and Meltzoff, an unlikely explanation for success in the task.

There were considerable differences in variability between training categories, and considerable differences in categories’ similarities with the test items, as judged by adults. Figure 7 shows a lack of variability effect in infants’ ability to match novel word with novel exemplars. Word learning independent of perceptual similarity suggests that the learning is at some level conceptual, or it may be that repeated provision of labels during training may have consolidated the perceptual categories of the stimuli, minimizing the effect of perceptual distance between the test item and any prototype formed during training.

Exemplar-Based Repetition of Mappings Between Word and Object

The bulk of training consisted of pointing to an image and repeating its name (see Table 2). Many reports have noted the importance of frequency of parental utterances in early word learning (e.g., Bridges, 1986; Huttenlocher, Haight, Bryk, Seltzer, & Lyons, 1991; Huttenlocher & Smiley, 1987) and the importance of the provision of isolated labels by mother (e.g., Messer, 1981; Ninio, 1985; Tomasello & Farrar, 1986). Speculatively, the principal factor in training was repetition. However, training involved more than mere ostension. For example, infants played eight sessions of a sorting game toward the end of the training period. In terms of establishing a mechanism, variation in the training regime is a weakness in the present study.
Fostering Joint Attention to the Word—Object Relationships

Given the importance of shared attention in early language learning, perhaps training facilitated mothers’ ability to point out and name objects for their children. Joint attention, perhaps as a secondary cue to word meaning, can potentiate word learning (see Baldwin, 1995, for one version of how this might operate). Schaffer, Hepburn, and Collis (1983) found that mothers of 10-month-olds were less successful than mothers of older children in orienting their children to specific tasks, and Bridges (1986) argued that mothers become more adept at attention direction as time goes on. One possibility is that the repetitive training regime increased the amount of successful ostension above a critical level.

Concluding Remarks

There are two broad schools of theory in language development. First, there are theories that define children’s abilities by what they cannot do (e.g., Golinkoff et al., 1994; Kamhi, 1986). These reify adults’ intuitions about language, arguing that children perform poorly because they do not understand one or more principles of language. In contrast, other theories argue that children may deploy learning procedures qualitatively similar to adults but show relatively poor performance because of lack of experience. This dichotomy in metatheory was summarized by Reddy (1999): “In trying to trace the origins of a phenomenon (e.g., communication), we seem to have two choices facing us: Either we start from the ‘developed’ phenomenon and work backwards in age until we cannot see it any more, or we start at an early age and work forwards, looking for something like the phenomenon and watching how it develops” (p. 25). In this study, infants learned decontextualized words at a younger age than predicted by many theorists. One-year-olds are perhaps not as prelinguistic as many have thought them to be.

References


