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NOTE

Phonological specificity in children at 1;2*

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ABSTRACT

The specificity of infants' phonological representations is examined by comparing their sensitivity to mispronunciations of novel and familiar words, using the preferential looking task. 29 children at 1;2 were trained and tested on familiar and novel word–object pairs. Children showed evidence of sensitivity to mispronunciations of novel and familiar words, indicating detailed phonological representations. Discrepancies between this study and earlier investigations are discussed with reference to differences between habituation and preferential looking tasks.

INTRODUCTION

From as early as one month of age, children are excellent discriminators of speech sounds (Eimas, Siqueland, Jusczyk & Vigorito, 1971). Yet it is unclear whether they use these abilities to their fullest extent when they begin to learn the meanings of words.

Several studies conducted in the 1970s found that toddlers and pre-schoolers have difficulty distinguishing between phonetically similar words (Eilers & Oller, 1976; Barton, 1980). Children are capable of distinguishing such contrasts in a pure sound discrimination task (Stager & Werker, 1997), and some children are even capable of producing them (Eilers & Oller, 1976). Consequently, many researchers have attributed children's failure on word discrimination tasks to underspecification of phonological representations. In other words, it has been suggested that children's phonological representations of words might be less detailed than those of adults.

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Two main explanations for children's apparent underspecification have been proposed. The first is a developmental hypothesis (Charles-Luce & Luce, 1990), which suggests that phonological representations remain underspecified because the low density of children's vocabularies does not require full detail. According to this explanation, representations would become more detailed when required by vocabulary expansion. The second is a familiarity hypothesis, whereby representations are underspecified due to the novelty of a word, and become more detailed as words become more familiar (Metsala, 1999).

Recent investigations with habituation tasks and with the preferential looking task have provided a much improved body of evidence in this area. These studies indicate that neither a developmental nor a familiarity hypothesis can satisfactorily account for children's performance. Rather, it is suggested that young word learners do have detailed phonological representations, but that their ability to access such representations may be limited in some situations (Swingley & Aslin, 2002; Fennell & Werker, 2003).

Habituation studies test the specificity of phonological representations by measuring whether or not children dishabituate when the word in a habituated word–object pairing is switched with a phonetically similar word. Using this technique, it was found that children at 1;5 successfully dishabituated after switches of a habituated novel word (Werker, Fennell, Corcoran & Stager, 2002). In contrast, children at 1;2 did not notice the switches unless the task was altered to remove the object association component (Stager & Werker, 1997; Werker *et al.*, 2002). Such results indicate a developmental change in phonological specificity, whereby children at 1;5 retain more detailed representations of novel words than do children at 1;2.

Studies using familiar words, however, reveal a different pattern in the development of phonological specificity. Recent investigations using preferential looking have examined whether children's looking behaviour changes in response to mispronunciations of familiar words. Both children at 1;2 (Swingley & Aslin, 2002) and children at 1;6 (Swingley & Aslin, 2000; Bailey & Plunkett, 2002) responded differentially to mispronunciations: they looked significantly less at an image when its name was mispronounced in comparison to when it was correctly named. This effect was consistent regardless of vocabulary size or the presence of phonetically similar 'neighbours' in children's vocabulary. This suggests that even children at 1;2 have phonologically detailed representations of familiar words. A recent habituation experiment provided support for this conclusion when children at 1;2 were found to dishabituate on switch trials involving phonetically similar, familiar words (Fennell & Werker, 2003).

Overall, this pattern of results suggests that word familiarity is an important factor in determining the level of accessible phonological detail

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associated with a word at 1;2: novel words associated with an object are phonologically underspecified whereas familiar words are retained in detail. A plausible interpretation of these results is that children at 1;2 may not have the processing resources to allocate to phonetic discrimination when engaged in a word learning task (Swingley & Aslin, 2002; Werker *et al.*, 2002; Fennell & Werker, 2003). By the age of 1;6, these processing limitations seem to have been surmounted.

Despite the growing number of studies in this area, no single study has compared the phonological specificity of novel and familiar words, nor has there been any examination of phonological specificity in novel words using the preferential looking technique. The current debate on phonological specificity in early word learners hinges on differences in performance on novel and familiar word tasks; systematic comparisons of the two types of words are therefore crucial.

The lack of overlap between the habituation and preferential-looking tasks is a major area of concern. The habituation task taps a child's ability to notice a mismatch when an auditory stimulus changes. In contrast, participants in the preferential looking task have to match a word with the correct image. The only area in which both tasks have been used is with familiar words at 1;2. While the results from both tasks converge in this case, it is not clear that this will be the same for novel words, as the two tasks may measure different levels or aspects of word learning.

The current experiment addresses these concerns by using preferential looking to provide an analysis of children's sensitivity to mispronunciations of novel and familiar words at 1;2. Children were trained on two familiar and two novel word object pairings, and tested to determine whether their looking behaviour changed in response to mispronunciations, and furthermore whether this change was influenced by word familiarity. Based on previous research, we expected that children would be sensitive to mispronunciations of familiar words, but not of novel words.

METHODS

The preferential looking task used by Bailey & Plunkett (2002) is repeated here. Some changes were made, however, to include the learning phase necessitated by the inclusion of novel words.

Participants

The participants in this experiment were 29 children at 1;2 ($M = 1;02{\cdot}09$, $S.D. = 0{\cdot}08$). Thirteen of these participants were boys while 16 were girls. An additional 11 children at 1;2 were tested, but excluded from the analysis due to fussiness or inattentiveness (N = 8), parental interference (N = 2),

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TABLE 1. *Length of auditory stimuli (ms) for correct and incorrect pronunciations.*

	Ok	Off (Place)	Off (Voicing)
tuke	598	591	521
vope	597	644	633
ball	575	585	558
cup	447	434	500

or equipment failure (N = 1). All children had normal hearing and vision, and were from homes where British English was the principal language in use. During the week prior to their visit, parents completed the Oxford Communicative Development Inventory (Hamilton, Plunkett & Schafer, 2000), a British adaptation of the MacArthur CDI.

Stimuli

The inventory of speech stimuli for this study consisted of two novel words (*tuke* [tuk] and *vope* [vop]) and two familiar words (*ball* [bɔl] and *cup* [kʌp]). Mispronunciations of each word were created by changing either place of articulation or voicing in the word initial consonant, resulting in: *duke* [duk], *puke* [puk], *fope* [fop], *zope* [zop], *gall* [gɔl], *pall* [pɔl], *gup* [gʌp], and *tup* [tʌp]. Children's exposure to different mispronunciations was counterbalanced so that in each block one of the familiar words and one of the novel words underwent changes in place, and the other two words had voicing changes. The type of mispronunciation for each word was then reversed in the second block so that each child was exposed to both changes. This counterbalancing process ensured equal exposures, but as in other studies with multiple types of phonetic changes (Swingley & Aslin, 2000; Bailey & Plunkett, 2002; Swingley & Aslin, 2002), did not allow for a systematic analysis of mispronunciation types, as children did not experience both mispronunciations of each word in each block of testing.

The speech stimuli were recorded by a female speaker of British English who was instructed to read each word in the carrier phrase '*Look*! ___!' in an enthusiastic, child-directed voice. Table 1 shows the length of each target word for both correct (OK) and incorrect (OFF) pronunciations. Accurate pronunciations and mispronunciations were inspected using SoundEdit 16 and were found not to systematically differ from each other in terms of length, amplitude, or intonation contour.

The objects associated with the words were colourful, complex three-dimensional objects, and are displayed in Figure 1. Animations were created for use in the training trials, and stationary versions made for testing trials.

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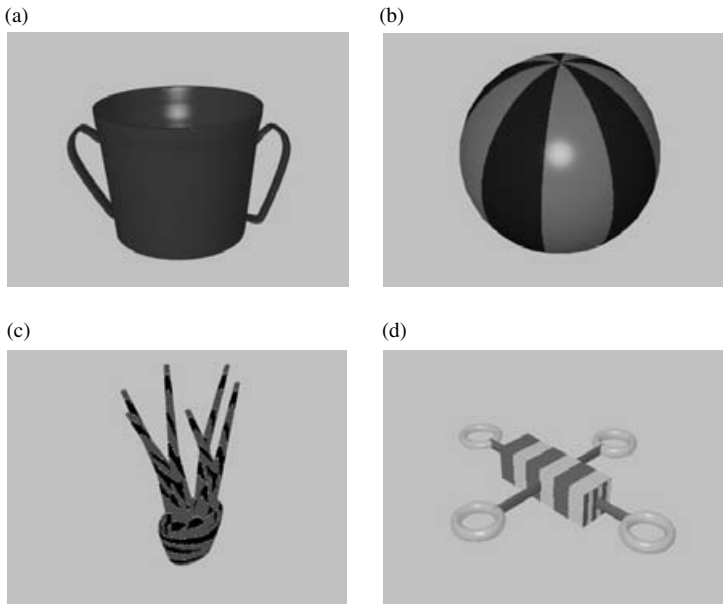


Fig. 1. Familiar (a, b) and novel (c, d) objects.

In order to avoid any effect of movement type, all objects were shown rotating around their vertical axis. During training trials, a single stationary image was displayed for one second. It then began to rotate and continued in motion until the end of the five second trial.

On the basis of Gogate & Bahrick's (1998) finding that synchronous presentation of sound and object facilitated the association of the two, the training phase of the experiment was designed such that the first presentation of the label coincided with the onset of rotation of the object. However, the object continued to rotate after the first presentation of the label, avoiding the precise synchrony that Gogate & Bahrick (1998) argued was important in their study. More importantly, testing in the current study was carried out whilst the objects were motionless. This corresponds to the 'still' condition employed by Gogate & Bahrick (1998) which found no evidence of association between object and sound. Any evidence of learning in this study must be attributed to knowledge of the arbitrary word–object association rather than the movement of the object in training trials.

Procedure

Throughout the experiment, children sat on their caregiver's lap, facing a projection screen which measured 1·3 m in width and 0·35 m in height. Two

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cameras mounted above the projection screen recorded the eye movements of the infant. Signals from the two cameras were routed via a digital splitter to a VCR which recorded to separate time-locked images of the child onto a single tape. Training and testing trials were grouped in alternating blocks resulting in a train–test–train–test order.

Training

There were eight training trials in each of the two training blocks; both novel and familiar word–object pairs were presented twice. The objects were displayed one at a time in the centre of the screen for a period of five seconds, during which the object was labelled twice. The first token occurred at one second after image onset, and was timed to co-occur with the onset of movement in the object. The repetition of the object label occurred three seconds into the trial, at which point the object was still rotating. Note that onset of label repetition does not coincide with any change in object movement. The order of presentation of the word–object pairings was randomized.

Testing

There were eight test trials in each of the two testing blocks of the experiment. In each block, children heard both novel and both familiar words once with a correct (OK) pronunciation, and once with an incorrect (OFF) pronunciation, resulting in a total of two correct and two incorrect pronunciation trials for each word in the experiment.

In each trial, two objects (either the two novel objects, or the two familiar objects) were displayed (horizontally aligned) on screen for five seconds. During this time, one of the objects was labelled within the carrier phrase 'Look! Look, ___!'. The onset of the target word occurred 2600 ms into the trial. In each block, trials were counterbalanced for target side; each object occurred an equal number of times on each side of the screen and was labelled with an equal number of correct and incorrect pronunciations. The ordering of test trials within each block was randomized.

Scoring

The video recording of each participant's looking behaviour was analysed using the procedure described in Schafer & Plunkett (1998). Videotapes of the testing phases were analysed twice after each experimental session. An advantage of scoring off-line is that averaging two scoring sessions reduces observer-introduced variability without affecting the underlying variance due to the subject's behaviour. A button-press apparatus was used to create a file tabulating the time-course of looks to each picture. Each infant's

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performance was coded by a trained coder blind to the location of the target picture and the accuracy of pronunciations. Each video was scored four times: twice for looks to the right, and twice for looks to the left. The coding was only accepted if the correlations between the two scorings on each side were at least 0·90. Inter-rater reliability was tested by having a second trained coder re-score the data from 15% of participants. As in previous studies using this technique (Schafer & Plunkett, 1998; Meints, Plunkett & Harris, 1999; Schafer, Plunkett & Harris, 1999; Bailey & Plunkett, 2002), reliability was very high, with Pearson product-moment correlations of 0·95 and above.

Measures

After coding was complete, each trial was divided into two phases. The pre-naming phase was measured from the onset of the display to the onset of the target word, and the post-naming phase was measured from the onset of the target word to the offset of the display. In order to account for the minimum reaction times of the infant and the scorer, the shift between phases was placed 200 ms after the onset of the target word.

There is some variation across studies as to placement of the beginning of the second, naming phase of the trial. Swingley & Aslin (2000; 2002) place the phase shift delay at 367 ms but reported that there was no difference in their results for placement of shift anywhere from 200 to 400 ms. Bailey & Plunkett (2002) use a phase shift of 400 ms, while other researchers measure the effect of naming from the onset of the target word (Golinkoff, Hirsh-Pasek, Cauley & Gordon, 1987; Schafer & Plunkett, 1998; Meints *et al.*, 1999). Haith, Wentworth & Canfield (1993) estimated that the minimum latency for three-month-olds to initiate a shift in latency to a peripheral stimulus is from 133 ms to 200 ms. Our measures include trials both where the infant does and does not need to shift gaze at the onset of the target word. Therefore, we adopt an intermediate phase delay of 200 ms. To ensure that children were participating in the task, only trials with at least 1500 ms of looking in both the pre- and the post-naming phases were included in the analysis.

The measure used to analyse children' looking behaviour was the PROPORTION OF TOTAL LOOKING (PTL). This estimates the proportion of total looking time which is spent looking at the target image. PTL is calculated by dividing the total time spent looking at the target by the total time spent looking at either the target or the distracter. This measure was computed for both phases of the trial. The EFFECT OF NAMING on a given trial is the difference in PTL between the pre- and post-naming phases.

Comprehension and production scores on infant performance on the Oxford CDIs completed by parents were compared with children' sensitivity to mispronunciations. The sensitivity measure was calculated by subtracting

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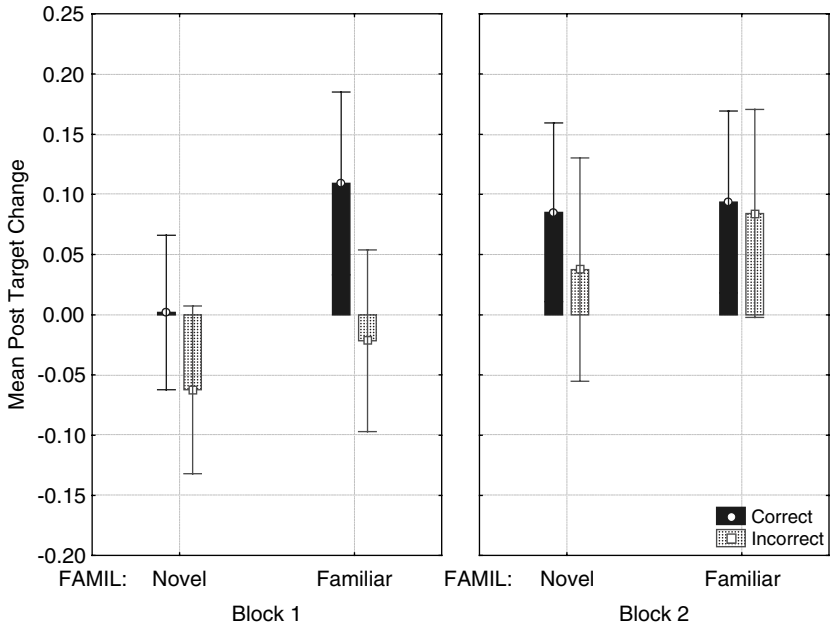


Fig. 2. Effect of naming in Blocks 1 and 2.

the effect of naming for mispronunciation trials from that of correct pronunciation trials in each condition of word familiarity.

RESULTS

The effect of naming on proportion of total looking was analysed with a four-way repeated measures ANOVA including the factors block, word familiarity, pronunciation accuracy (correct and incorrect), and trial phase. The analysis revealed a significant main effect of trial phase ($F(1, 28) = 15{\cdot}56$, $p < 0{\cdot}0005$): children looked significantly more at target objects in the post-naming phase of trials than they did in the pre-naming phase. This effect was qualified by two-way interactions block × trial phase ($F = 6{\cdot}07$, $p < 0{\cdot}03$) and trial phase × word familiarity ($F = 4{\cdot}32$, $p < 0{\cdot}05$). The interaction pronunciation accuracy × trial phase also approached significance ($F = 3{\cdot}73$, $p = 0{\cdot}06$). There were no other main effects or interactions (all ps $> 0{\cdot}10$).

Earlier work led us to predict that children would be sensitive to mispronunciations of familiar but not novel words. To examine the relationship of the effects found in the ANOVA to the predicted pattern of sensitivity to mispronunciations, planned comparisons were used to determine whether pre- and post-naming values of PTL were significantly different at each level of word familiarity and pronunciation accuracy. Figure 2 shows the mean

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value of increases in PTL after naming in each condition of word familiarity and pronunciation type for Blocks 1 and 2.

Block 1

Planned comparisons showed that the effect of naming for correct pronunciations of novel words in the first block of testing was not significant, $p > 0{\cdot}95$. This implies that in the first testing block, children had not learned the novel word–object association. It is therefore not appropriate to examine sensitivity to mispronunciations for novel words in this block.

For familiar words, however, children showed a significant effect of naming for correct pronunciations in Block 1, $F(1, 28) = 8{\cdot}69$, $p < 0{\cdot}006$. This result represents the predicted response to a named target within the preferential looking task: children spent more time looking at an image after they heard it being named. In contrast, there was no significant effect of naming for incorrect pronunciations of familiar words, $p > 0{\cdot}50$. To determine the significance of children' sensitivity to mispronunciations of familiar words, a paired-samples t-test was used to compare the magnitude of effect of naming in each condition. The difference between correct and incorrect pronunciations in Block 1 was significant, $t(28) = 2{\cdot}12$, $p < 0{\cdot}022$, one-tailed. These results support earlier demonstrations (Swingley & Aslin, 2002; Fennell & Werker, 2003) that children at 1;2 have detailed phonological representations of familiar words.

Block 2

In Block 2, planned comparisons revealed significant increases in PTL after naming for correct pronunciations in both novel ($F(1, 28) = 5{\cdot}52$, $p < 0{\cdot}03$) and familiar words ($F = 6{\cdot}44$, $p < 0{\cdot}02$). There was also a near-significant increment in target looking for incorrect pronunciations of familiar words ($F = 3{\cdot}98$, $p = 0{\cdot}056$). The significant effect of naming for novel words indicates that by this second testing block, children have learned the novel word–object associations. In contrast, there was no significant effect of naming for incorrect pronunciations of novel words, $p > 0{\cdot}40$; children responded systematically to correct pronunciations of novel words, but not to incorrect pronunciations, suggesting that children at 1;2 have more detailed representations of novel words than was predicted. However, a comparison of the effect of naming for correct vs. incorrect pronunciations of novel words showed no significant difference, $t(28) = 0{\cdot}72$, $p = 0{\cdot}238$, one-tailed.

The second significant effect of naming found in Block 2 was for correct pronunciations of familiar words. This is unsurprising given the children's performance in Block 1. We would also expect a continuation of the sensitivity to mispronunciations of familiar words. This expectation was not

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met: the planned comparison in this condition showed a nearly significant effect of naming after mispronunciations. Indeed, a paired-samples t-test showed that there was no significant difference in responses to correct vs. incorrect pronunciations in this block, $t(28) = 0{\cdot}169$, $p > 0{\cdot}80$. Reasons for this result are further considered in the discussion. We note here that, given the performance of children in Block 1, it seems unlikely that this result indicates a lack of phonological specificity. Rather, we suspect that it must be task related.

Item analysis

An item analysis was also conducted to ensure that our findings were consistent across words. Four-way mixed ANOVAs including the factors block, word, pronunciation accuracy and trial phase were conducted for both novel and familiar words. For novel words, there was a significant interaction between trial phase and block, $F(1, 202) = 4{\cdot}44$, $p < 0{\cdot}05$, reflecting the effect of learning in Block 2. No other effects were significant, all ps $> 0{\cdot}15$.

The ANOVA for familiar words showed main effects of word ($F(1, 200) = 52{\cdot}44$, $p < 0{\cdot}000$) and of trial phase ($F = 11{\cdot}17$, $p < 0{\cdot}001$), as well as a near significant two-way interaction trial phase × pronunciation accuracy ($p = 0{\cdot}06$). The main effect of word in this analysis represents the overall preference of children for the image of the ball; the effect of naming was consistent across both words, however, as indicated by the absence of an interaction involving word. The interaction between trial phase and pronunciation accuracy reflects the fact that accurate pronunciations produced systematic effects of naming whereas mispronunciations did not.

Effect of vocabulary size

There was no correlation between sensitivity to mispronunciations of familiar or novel words with either productive or receptive vocabulary, in either testing block, all ps $> 0{\cdot}10$. This supports the findings of Bailey & Plunkett (2002) and Swingley & Aslin (2002), neither of which found relationships between vocabulary size and sensitivity to mispronunciations in children at 1;2 and 1;6, respectively.

DISCUSSION

Surprisingly, the findings of this study do not support the existence of a strong effect of familiarity on phonological specificity in children at 1;2. While the correct form of novel words prompted the appropriate response, incorrect forms were not sufficient to activate target looking. This suggests

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that phonological representations of novel words in children at 1;2 may be more detailed than earlier work has found. Nevertheless, children were even more sensitive to mispronunciations of familiar words. In addition to responding systematically to correct, but not incorrect pronunciations of familiar words in the first block of testing, children also showed a significant difference between the two pronunciation conditions. Such a difference was not evident in the results for novel words. While the absence of a significant difference suggests that these newly learned words have relatively fragile representations, the lack of response after mispronunciations indicates that children at 1;2 are still able to access a significant level of detail.

The contrast between the performance of children in this study compared to earlier studies (Stager & Werker, 1997; Werker *et al.*, 2002) using the habituation switch task indicates that the preferential looking task used here must allow easier access to fragile phonological representations.

Fennell & Werker (2003) suggest that the preferential looking task may be easier in terms of allowing attention to phonetic detail, as children can make use of side-by-side cues to verify which image they are meant to be attending. This suggestion is plausible in the context of learning two words that sound very similar. If an infant is trained on a *bih* word–object combination and a *dih* word–object combination, then presented with both images, it seems likely that they will in fact make the correct match. In the current study, however, the children are trained on two very distinct novel word–object combinations. If anything, the presence of side-by-side cues in this situation would hinder sensitivity to mispronunciations: after all, *zope* still sounds much more like *vope* than does *tuke*.

Nevertheless, difference in task demands of the two procedures may be highly relevant. In the habituation-switch task, children are required to learn two very similar sounding words. In the current task, however, children learn two phonetically different words, and their sensitivity to mispronunciations of those words is tested. Perhaps young word-learners are capable of encoding and accessing phonetic detail in novel word representations, but have difficulty when required to learn a minimal pair, perhaps because of some processing overload. This seems like a very likely explanation. However, Stager & Werker (1997) also included a condition in which only one novel word–object association was habituated, and children still failed to dishabituate when the correct word was replaced by a phonetically similar switch.

More subtle differences in the two tasks, however, may provide more insight into the findings of the current study. In the habituation-switch task, the child has to notice a MISMATCH between the current word–object pairing and a habituated pairing. The preferential looking task is different: the child has to MATCH a word with the correct object. It seems possible that in the

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earlier stages of word learning, mismatching is less sensitive to the subtleties of a word's representation than is matching. Novice word learners might only match a word and object if the match is a precise one, but at the same time be reluctant to reject a pairing presented to them on the basis of a small featural change. Indeed, this explanation is compatible with Swingley & Aslin's (2002) suggestion that the switches in the habituation switch task might not be different enough to trigger dishabituation, despite detailed encoding of novel words.

Children in this study were highly sensitive to the mispronunciations of familiar words in Block 1. In Block 2, however, they responded systematically to correct and incorrect pronunciations. A simple explanation of this effect is that children had 'overcome' mispronunciations in the second block of testing, and were willing to accept that *gup*, for example, was an acceptable token for *cup*. This could also explain one of the differences between the current results and those of Swingley & Aslin (2002). In the current study, there was no effect of naming for mispronunciations in Block 1; in contrast, incorrect forms in the Swingley & Aslin (2002) study were found to reduce but not eliminate the effect of naming. Their experiment, however, was not arranged in blocks, and their results may reflect a continuous progression from strong effects of mispronunciations early in the study to weak effects later on.

It is, of course, possible that children succeeded in noticing mispronunciations of novel words in Block 2 because they were not engaged in a word learning task, but had simply learned an amodal perceptual relation.[1] Recall that the introduction of novel labels in the training phase of each block was synchronized with the onset of rotation of each object. Gogate & Bahrick (1998) demonstrated that SYNCHRONIZATION of object movement with labelling is important for the detection of sound–object associations. Seven-month-olds fail to detect these associations in ASYNCHRONOUS and STILL sound–object habituation conditions. The current results may, therefore, parallel Stager & Werker's (1997) findings for children at 1;2 who discriminated minimal pairs when no label–object association was required (the checkerboard condition).

We think this interpretation of our results is unlikely for several reasons: first, object–label training did not use the same synchronization procedures as Gogate & Bahrick (1998). Only the first mention of the label in each trial was synchronized with onset of object movement. Importantly, the test phase in our study was conducted with both objects static, corresponding to the STILL condition in Gogate & Bahrick's (1998) study in which they found no evidence of object–sound association. Second, familiar words

[1] We thank an anonymous reviewer for pointing out this possibility.

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were introduced to the children in our study in precisely the same manner as the novel words. We observed no disruption in their processing. On the contrary, the results corroborated the recent findings of Swingley & Aslin (2002). Finally, our children discriminated two distinct novel labels and associated each label with a distinct object in the second testing phase of the experiment. In contrast, children in the checkerboard version of the Stager & Werker (1997) experiment were not required to demonstrate any association between a label and an object. Stager & Werker report failure to discriminate labels only when children associate labels with objects.

Of course, we cannot claim that our use of the preferential looking task necessarily involves referential or symbolic function. Nevertheless, our results do demonstrate that children at 1;2 maintain considerable phonological detail of newly learnt words when these words are associated in an arbitrary fashion with different objects. To our knowledge, this has not been demonstrated before.

A final consideration of the results from this study relates to the issues of vocabulary size and phonological neighbourhood density. The existing literature suggests that there is some debate as to whether larger vocabulary size and/or the presence of phonological neighbours contribute to children's ability to notice mispronunciations or switches. For example, Swingley & Aslin (2002) found no effects of vocabulary size or presence of phonological neighbours on children's detection of familiar word mispronunciations at 1;2. In contrast, Werker *et al*. (2002) found that vocabulary size WAS correlated with the ability to notice switches of phonologically similar novel words at the same age.

The results of the current study indicate that methodological differences may once again play a role. We found no correlation between vocabulary size and sensitivity to familiar word mispronunciations, which supports the conclusions of Swingley & Aslin (2002). On the other hand, the absence of an effect of vocabulary size on sensitivity to NOVEL word mispronunciations contrasts with the results of Werker *et al*. (2002). Children in the current study, however, were able to detect novel word mispronunciations, while the children in Werker *et al*. (2002) generally did not notice switches. As discussed previously, children's ability to access detail in new phonological representations seems to be facilitated by the preferential looking task. Perhaps larger vocabularies only help to enhance access to phonological representations when that access poses a major challenge for the listener, such as in the novel word habituation-switch task at 1;2. This explanation is consistent with the well-established absence of vocabulary size effects on sensitivity to mispronunciations/switches of novel or familiar words in children older than 1;5 (Swingley & Aslin, 2000; Bailey & Plunkett, 2002; Werker *et al*., 2002).

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CONCLUSIONS

We hypothesized that children at 1;2 would be sensitive to mispronunciations of familiar words but not of novel words. The results showed that children are indeed sensitive to mispronunciations of familiar words, but that with increased exposure even incorrect forms can activate target looking. When presented with the correct form of novel word–object combinations children in our study, responded appropriately. However, they showed no systematic response to incorrect forms of the trained novel word. While the absence of a significant difference between these two conditions suggests that novel word representations are still fragile, it does seem that children at 1;2 may have more access to phonologically detailed representations of novel words than was previously thought. Differences between the results of the current study and those of earlier studies seem to be largely due to discrepancies in task demands. In particular, it seems that the distinction between match and mismatch sensitivity may be of critical importance. These differences raise interesting theoretical questions regarding differences between habituation and preferential looking tasks, consideration of which will help to provide new insight into the development of phonological specificity.

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