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[Charles A. Ferguson Prize for Best Student Poster] Learning to talk native:  
Listeners' perception of speech from three dialect areas

# **Learning to Talk Native: Listeners' Perception of Speech from Three Dialect Areas**

Katherine Sadis and Julie Roberts

## **1 Introduction**

The knowledge gained regarding the acquisition of language through research in typically developing children has been on the rise. In recent years, there have been major breakthroughs in understanding how children acquire language skills and master their sound systems. Language acquisition researchers study language, but not individual dialects, so they might explore how a child learns English or Chinese, but not how a child learns New York English or African American English. Dialect researchers do, however, map out specific regional dialect patterns and attribute them to various social and linguistic influences. Variationists have primarily worked with adult speakers and not with children. They have studied dialects in children under the age of 8 in the last several years, but there has been very little research on children learning dialects under the age of three.

### **1.1 Acquisition of language-specific features**

Most research on infant babbling has supported the notion that babbling is interpretable in terms of universal tendencies (Boysson-Bardies, Sagart, and Durand 1984). Cross-linguistic studies (Preston, Yeni-Komshian and Stark 1967, Nakazima 1962 in Boysson-Bardies, Sagart, and Durand 1984) in particular support this universalistic proposal and suggest that there are important similarities relating to the phonetic repertoire, which exist in the babbling of children from various linguistic communities. At the onset of language acquisition, all human beings are equipped with the same production mechanisms and all must face similar physiological constraints (Boysson-Bardies, Sagart, and Durand 1984). By focusing on characteristic features found in the target language, these researchers have more recently explored the question of whether the input language also has an influence on early babbling.

Boysson-Bardies, Sagart, and Durand (1984) focused on speech samplings of babble productions from 6-, 8- and 10-month-old infants of French, Chinese and Arabic backgrounds. The purpose of this study was to determine the extent to which constraints from the structure of the target language affect babbling production.

Forty volunteers, all native speakers of French, twelve of whom were phoneticians, judged the sample babbling of the children from all three language backgrounds. They were required to judge which sample of a pair they thought came from a French infant. These results revealed that the French listeners could better identify French infants at 8 months than at 6 and 10 months. The phonetician group reached significance in their correct identification of the 6 month and 8-month old infants. No group reached significance for the 10 month olds.

A recent production study also suggests that consonant production begins to approximate adult language before production of the first words (Boysson-Bardies and Vihman 1991). This study represented an attempt to determine whether language-specific patterns could be observed in consonants found in babbling and first word production. The first goal of this research was to determine whether systematic differences could be found in the babbling and first words of infants from French, English, Japanese and Swedish backgrounds. The second goal would be to assess whether these differences were related to the phonetic structure of the input language.

Twenty typically developing infants, five from each of the four linguistic regions (French, Japanese, Swedish, and English), were audio- and video-recorded twice a month from the age of 9 months until they had each produced at least twenty-five words in a half-hour session. Results revealed that the overall percentage of stops and fricatives in the four groups fits closely with the percentage of initial stops in the target words of each group, and, therefore, these commonalities can be seen as reflecting the structure of the language subsets.

In summary, these findings support the idea that the flexibility of the human language capacity should be understood in terms of a dual dependence on physiological constraints and the environment. These infant productions can be seen as the result of the interaction between articulatory tendencies and the influence of the phonetic structure of the linguistic environment around the time when infants begin to recognize and pay attention to words.

A cross-sectional study involving 10-month-old infants, investigated the influence on a target language in babbling and produced similar results. The speech of infants from varied linguistic backgrounds—Parisian French, London English, Hong Kong Cantonese, and Algiers Arabic—was studied (Boysson-Bardies et al. 1988). The differences observed were parallel to those found in adult speech in the corresponding languages.

In summary, perception and production data support the position that the linguistic environment modifies the child's general abilities at the babbling stage, at least in regard to gross cross-linguistic differences. These studies demonstrate that children begin to sound like speakers of their lan-

guage of input at a very young age, at least when that language is compared with one that differs markedly. Although dialects of a single language are unlikely to differ along the same domains as the languages included in the studies described above, these studies supply methodological models as well as cross-linguistic data that are relevant to dialect study of very young children.

## 1.2 Acquisition of Child Language Variation

In an early groundbreaking study, Fischer (1958) found social variation in children aged 3 to 10. Even though he did not separate the children by age in his analysis, this study set the stage for later research on variation in young children.

Guy and Boyd (1990) conducted a study of (-t,d) deletion on a sample group of participants, aged 4 to 65. Although the number of younger speakers was small, they found that very young children had acquired some constraints on deletion, but not others. These two studies clearly demonstrated that inclusion of children in variation studies was fruitful, and that the lower age limit for study had not yet been located.

Roberts (1996, 1997) examined (-t, d) deletion in 3- and 4- year old Philadelphian children. The results suggested that children were learning socially significant features, and responding not only to universal constraints on consonant cluster reduction. This evidence demonstrated that variation is learned simultaneously with related grammatical and lexical forms. Finally, the results strongly suggested that the children were formulating rules, not learning patterns in an item-by-item fashion, and that they demonstrated adult-like patterns of deletion only when they shared an adult-like structural analysis.

Labov (1990) discussed the similarity between children's dialect-specific productions and those of their mothers. He hypothesized that the early childcare situation, which is often female dominated, could lead to the favoring of female led sound changes. Roberts' (1997) study of Philadelphia (ay) in preschool children supported Labov's claim because children were more likely to acquire a Philadelphia change if they had parents who were Philadelphia natives (Roberts 2002). Early input is indeed important, Roberts notes, "at least in the early learning of socially influenced variables" (2002:341).

Roberts and Labov (1995) conducted research in which they looked at the Philadelphia short-*a* pattern in preschool children. Results revealed that although this pattern is highly complex, 3- and 4-year-old children demon-

strated significant learning of the Philadelphia short *a*. These are important findings for the future of dialect research because, not only were these children actively acquiring socially-governed features, but they were participating in the process of language change.

Foulkes, Docherty, and Watt (1999) explored the acquisition of glottal variation in British preschool children. These researchers were interested in the range of alternants acquired by the children and concluded that children, aged 2 to 4, were making good progress in learning the complicated glottal stop pattern.

In a more recent study, Smith, Durham, and Fortune (2005) explored the question of how and when children acquire complex patterns of variation, as seen in adult speech, through analysis of caregiver and child talk in a Scottish dialect. The phonological variable under observation is known as the 'hoose' variable and is an alteration between the diphthong [au] and the monophthong [u:], found in Scottish and Northern English speech. The findings of previous research demonstrated that this variable is stratified by class, gender, and style. Smith, Durham and Fortune (2005) showed that children's speech closely matches that of the caregiver. There is a strong relationship between the caregivers and children: when the caregivers increased their rates of the local variant 'hoose', the children were likely to follow.

In summary, dialect researchers studying variation have made efforts to include children as participants in their experiments. They have demonstrated that, even as young children begin single-word production, they also sound like native speakers of their community.

## **2 Methodology**

### **2.1 Purpose**

The purpose of the present study is to explore the acquisition of dialect features in toddlers. Although it may be unrealistic to assume that dialect differences will be found in babies as young as those included in by cross-linguistic studies cited above, we attempt to investigate the level at which dialect features may first appear. To this end, the current study comprises a perceptual exploration of the speech of two-year-old children. The research question to be answered is the following: Can adult listeners perceive dialect features of 2-year-old children and identify their region of origin?

## 2.2 Procedures

In order to conduct this research experiment stimuli were gathered from audiotapes of the speech of 2-year-olds and adult speakers from each of three locations: Vermont, New York, and Tennessee<sup>1</sup>. These acoustic files were then transferred onto three slide presentations. Order of the presentation of speakers was varied. The slide presentation comprised one slide for each of the speakers: one speaker from each age group from the three regions. The judges consisted of 150 undergraduate students all of whom were native speakers of American English. Each listener viewed a slide presentation in which they could play each sample as often as they liked. They were asked to identify the region of each speaker from a choice of three and record it on a corresponding answer sheet. They were also asked to record how sure they were of their responses on a scale that ranged from 'very sure' to 'unsure'. The data were coded, entered onto a spreadsheet, and graphed.

## 3 Results

The results revealed that listeners were able to identify adults more easily than children. In fact, as seen in Figure 3.1, their identification of the adult speakers was almost perfect. However, there was also strong evidence based on the data collected that children, even at the age of two, could be identified by region. In fact, all identification scores for the 2-year-olds were over 50% out of the 3 possible choices and significantly above chance ( $p > 0.0001$ ).

Listeners were more confident of their answers for adults than for the children. Of those who answered correctly, listeners were more than twice as certain about the adult speakers as they were about the two-year-olds in each of the three regions (See Figure 3.2).

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<sup>1</sup>The experiment was originally run with a 4-year-old group of speakers in addition to the other groups. However, the child from Tennessee turned out to have spent a considerable amount of time outside the South, which affected all results, so this group was excluded from the analysis.

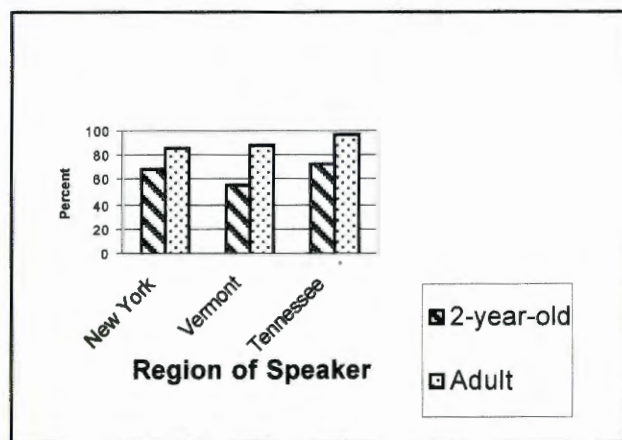


Figure 3.1: Percentage of correct identification of the region of origin of adults and children from New York, Vermont, and Tennessee by adult listeners.

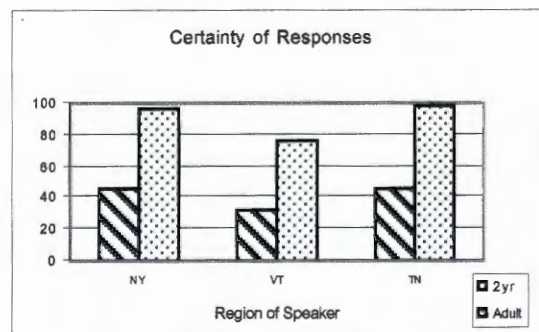


Figure 3.2: Percentage of those indicating that they were 'sure' or 'very sure' of their responses.

A related research question was whether a listener's region of origin would affect the results. We wondered if, for example, listeners from New York, would have an advantage in recognizing the dialect of a toddler from his or her home area. There were no listeners from Tennessee, but in our sample there were 38 listeners from New York and 30 from Vermont. The listeners originally from New York and Vermont were examined separately to see if they were better able to identify the speakers from their respective regions. This was shown to be insignificant: the listeners' background did



not give them an advantage in listening to speakers from their own area (See Figures 3.3 and 3.4).

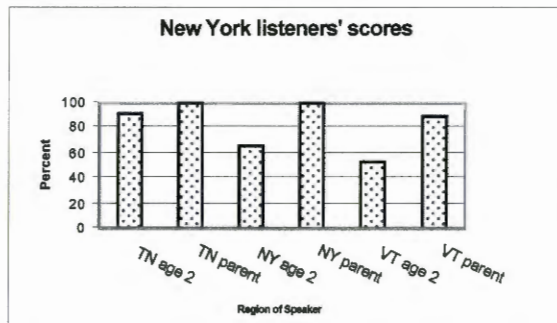


Figure 3.3: Percent correct for New York listeners' ratings of speakers from each of the three areas

In summary, even as children begin single word acquisition, they simultaneously begin to show recognizable dialect features. Further, listeners are able to use their knowledge of these various speech patterns to serve as identification markers.

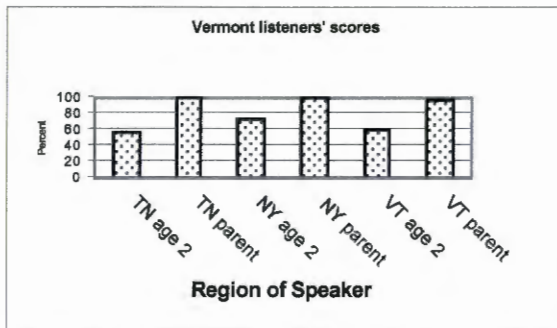


Figure 3.4: Percent correct for Vermont listeners' ratings of speakers from each of the three areas

## 4 Discussion

The crucial component in this study was the age of the speakers. Previous research has shown there are identifiable language features in early infant

babbling across various languages, and, therefore, we used speakers who are just starting language production at the 18-month to 2-year age range (Boysson-Bardies and Vihman 1991).

Our hypothesis was that although age of speakers was likely to affect perceptual ability to identify regional dialect, with adults more easily identifiable, even children at the 18-month to 2-year age may have identifiable regional markers. The results support this hypothesis and suggest that even as children begin single word acquisition, they simultaneously begin to show specific dialect features that adult listeners can access as identification markers. These listeners were able to identify adults more easily than children. However, we were able to see how children, even at the age of two, could be identified by region at a rate significantly above chance.

In summary, these results reveal that in spite of the success of previous research on the early acquisition of dialect, the minimum age of acquisition has not yet been discovered. Although the types of inter-dialect differences that exist in adults may be too subtle for dialect acquisition results to parallel those of the cross-linguistic research, we are encouraged to find that the speech of 2-year-old children, whose utterances consist of only one or two words, is identifiable by listeners. Future research includes further perceptual explorations of the speech of different age children and production studies of the vowels spoken by these toddlers.

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