

## **Learning to talk Philadelphian: Acquisition of short *a* by preschool children**

JULIE ROBERTS

*University of Vermont*

WILLIAM LABOV

*University of Pennsylvania*

### ABSTRACT

Recent work in the acquisition of variation has shown that children begin to learn patterns of stable variation at a very early age. In fact, it appears that they acquire variable rules at about the same time as they are acquiring related categorical rules. Little is known, however, about the transmission from generation to generation of features undergoing sound change in progress. Therefore, this study examines the acquisition of the Philadelphia short *a* pattern by 18 3- and 4-year-old children. Even though this pattern of the raising and tensing of short *a* is a complex one, the children had, for the most part, acquired it. In almost all cases, the children matched the short *a* distribution both of their parents and a group of adult Philadelphians who were interviewed in the mid 1970s and described in Labov (1989b). These results indicate that even the youngest members of the speech community are actively participating in ongoing sound change.

Acquisition of variation by first language learners is an area that was neglected for a long time in the history of sociolinguistics. However, recent work on this subject (Guy & Boyd, 1990; Labov, 1989a) has shown that the learning of variable rules—which, in the early years of sociolinguistic research, was thought to happen around the time of adolescence—in fact takes place much earlier. Roberts' (1994) study of (-t,d) deletion and (ing) production showed that these two variable rules are acquired to a large extent by the age of 3 or 4. With the sole exception of the effect of the semiweak verb form on (-t,d) deletion, the children had acquired the grammatical constraints on (ing) production and the phonological and grammatical constraints on (-t,d) deletion, including the dialectically specific following pause constraint. They had also begun the acquisition process on the stylistic and social constraints which affect these rules. In doing so, the children demonstrated that the preschool period is the most active one, not only for the acquisition of categorical rules, which have long been the subject of inquiry in the language acquisition field, but also for the acquisition of variable rules. These findings also emphasize that very young children are indeed members of the speech community, and no description of these communities is complete without their inclusion. The

rules governing (-t,d) deletion and (ing) production both produce patterns of variation that are stable over time and involve no change in progress, and both are affected by constraints which are, to a large extent, consistent across dialects of English.

This present article explores the acquisition of Philadelphia distribution of short *a*. Unlike (-t,d) deletion and (ing) production, short *a* is a segment which has been, and continues to be, involved in ongoing change. Also unlike these variables, the short *a* pattern is not consistent across a geographic area. In fact, because of its geographic specificity as well as its complexity, it provides a point of definition for the Philadelphia speech community.

Short *a* has been a frequently studied phenomenon, beginning with Trager's (1930) work. Ferguson (1975) outlined most of the features of the Philadelphia short *a* system. Since then, various other researchers, including Labov, Yaeger, and Steiner (1972), Hindle (1980), Payne (1980), and Labov (1980), have added to our knowledge of this phenomenon. Labov (1989b) provided an exhaustive account of the Philadelphia system, which will be summarized briefly.

The raising and lengthening of low vowels is a longstanding drift which has affected West Germanic for over 1000 years, and the raising and tensing of short *a* is part of that process. It is beyond the scope of the present study to go into the history of this phenomenon in any depth, but it is important to note that, in almost all American English dialects, short *a* has been affected by lengthening and raising. In the Northern cities area west of New England, all short *a* words are fronted and raised; in New England, only a short *a* followed by a nasal is affected. In New York, tensing and raising of short *a* words is noted before voiced stops, voiceless fricatives, and front nasals.

The Philadelphia pattern of raising and tensing short *a* involves fewer words than the New York system, but is very complicated. A brief review of this system follows.

1. Short *a* is tense before nasals and before front voiceless fricatives, with the following exceptions:

in weak words whose only vowel is schwa, it is almost always lax;  
 in words with the initial short *a* before voiceless fricatives, it is lax in uncommon words (e.g., *aspirin*, *ascot*);  
 in proper names with syllable-initial short *a* before nasals (e.g., *Anna*), it is variably lax; and  
 in abbreviations of stems where short *a* is followed by an intervocalic consonant (e.g., *math* or *exam*), it is lax.

2. Short *a* is tense in the words *mad*, *bad*, and *glad*, but lax in the intuitively obvious fourth member of this set, *sad*.
3. Short *a* is tense before nasals followed by the diminutive *-ie* and occasionally before voiceless fricatives plus *-ie*. It is also tense in some words before intervocalic /r/ (e.g., *parent*).

4. Particularly relevant to the present study were Labov's (1989b) and Payne's (1980) findings for younger speakers. (Both studied speakers down to age 8.) Labov found that his speakers showed an increasing tendency to use tense vowels before /l/ in particular words (e.g., *pal* and *personality*). The fact that this tendency decreased with age and that earlier reports of short *a* in Philadelphia did not mention tensing before /l/ led Labov to conclude that there is change in progress in this sub-category. Payne noted a tendency for tense short *a* before intervocalic /n/ in particular words (e.g., *planet*). However, Labov did not find a similar tendency in working-class Philadelphians.

The complexity of this vowel system would seem to make it difficult to acquire, and the one study on the acquisition of short *a*, Payne (1980), shows that this is indeed the case. In her study, however, the children, aged 8 to 20, were acquiring the short *a* pattern as well as other Philadelphia variables as a second dialect. In other words, all of the speakers had moved to Philadelphia after having learned to speak another dialect. She found that the other phonetic variables she studied – such as the fronting of /uw/ and /ow/, the centralization of the nucleus of /ay/ before voiceless obstruents, and the raised nucleus of /oy/ – were for the most part acquired easily by the children. They showed very little success, however, in acquiring the short *a* pattern. She concluded that, even if children were born and raised in the Philadelphia area, their chances of acquiring this system were extremely slight unless their parents were also born and raised there.

This article focuses on very young children, aged 3 and 4, most of whom are in just this ideal dialect learning environment, and addresses the following questions. Have the children learned the short *a* system? If they have not completely acquired it, which of the environments are the most difficult for them to learn? Are the children participating in the language change which is ongoing in the environment of intervocalic /l/ and in the lexical diffusion involving words with intervocalic nasals (e.g., *planet*)?

#### METHODOLOGY

For the present study, 17 children, aged 3;2 to 4;11, were tape-recorded over a period of 4 months. There were 11 girls and 6 boys included in the study. A Nagra tape recorder and Sony ECM 50 lavalier microphone were used to tape the children, one to two at a time, at their day care/nursery school, Kids' Land,<sup>1</sup> located in a working-class to lower middle-class area of South Philadelphia. This was considered an ideal site for this type of study because working-class to lower middle-class urban communities are likely to have fewer immigrants, more homogeneity, and less stylistic correction. South Philadelphia demonstrates exactly these socioeconomic characteristics. It is primarily a white neighborhood, with many of its residents claiming an Italian background. It is not uncommon to find grandparents, parents, and chil-

dren, if not in the same house at least living within a few blocks of each other. Finally, South Philadelphia has been studied extensively over the years by the Language Change and Variation Project at the University of Pennsylvania under the direction of William Labov and by students in field methods courses; its speakers have been shown to be among the most advanced in terms of use of the vernacular.

Most of the children attending this nursery school program were from the immediate neighborhood. These children spent from 3 to 5 days per week at Kids' Land in a daily activity program, which included mealtimes, snacks, nap, free play, circle time, and a quiet time watching children's videotapes on television. Children had to be 2½ years old and toilet trained to attend Kids' Land; they "graduated" when they were old enough to begin kindergarten. Many of the children went on to attend parochial schools in the area. The children included in the study were life-long residents of the Philadelphia speech community. The parents of 13 children were also born and raised in Philadelphia. Of the other 4 children, background data could not be obtained for 2, and the other 2 had parents who were not raised in Philadelphia. One child, Mike, had parents who were born and raised in Italy and came to Philadelphia as adults. Another child, Gia, had a father who was raised in Philadelphia and a mother who moved frequently throughout her childhood because her father was in the diplomatic corps. Of all the children, only Mike had no inkling of the Philadelphia short *a* system. Therefore, his data were dropped from the group analysis.

The children were interviewed multiple times during a 4-month fieldwork period. As might be expected, it was necessary to make great departures from the standard format of the sociolinguistic interview often used with adults. The goal was to get as much speech as possible, just as it is in adult interviews, but the techniques required to do so bore little resemblance to the familiar topics and questions often used with adults. What finally emerged as the most successful activities were toy telephones, a Sesame Street playhouse with characters the children could manipulate, a story-telling activity using books with and without pictures, and puppet play, which allowed for the elicitation of proper names, *Janet* and *Allen*. In addition, one more structured activity proved to be particularly useful in gathering short *a* tokens in particular environments. Picture cards containing relevant short *a* words were picked from a bag and labeled. To emphasize the game aspect of the activity, when all of the pictures had been chosen, the children were asked to toss the pictures back into the bag after labeling them again. This activity might, at first glance, appear to be a child-sized version of the word list often found in adult sociolinguistic interviews. In fact, Labov (1989b) cautioned against the use of word lists for short *a* because he found a great deal of correction present in the list-reading style of the speakers he studied. In the present case, however, the children appeared to enjoy the game and to feel that the challenge was in correctly labeling the picture (and in tossing it), not in pronouncing the words "correctly." If, in fact, 3- and 4-year-olds were capable of the kind of cor-

rection Labov found in his older speakers, they did not appear to demonstrate it in this situation.

Of the parents, 8 were interviewed in their homes for comparative purposes as well as to gather background information. Other parents were contacted by telephone to obtain this information, which included where they were raised, occupation, number and ages of people in the household, and information on the language acquisition background of the children. In all, 146 hours of tape were recorded. The tapes were coded as to the whether the short *a* tokens were tense or lax. In addition, the vowel tokens of two of the children were digitized and analyzed using the Kay Computerized Speech Lab on a 386 personal computer.

## RESULTS

One of the first questions addressed in this analysis concerned the reliability of the coding of the short *a* tokens as tense or lax. Coding tokens by listening to them is a less objective method than vowel analysis, but the distinction between the vowels was found to be of such clarity that it was felt that confidence could be placed in impressionistic ratings in this case. In fact, out of 1436 short *a* tokens for the children, only 44, or 3% of the tokens, were classified as intermediate and, as such, could not be identified as either tense or lax. Of the 94 adult short *a* tokens, none were intermediate.

The vowel charts, presented as Figures 1 and 2, support this notion. These charts show the vowels of Jenny, aged 3;11, and Danny, aged 4;10. They are digitized and analyzed measurements of vowel nuclei with *F*2 along the X axis and *F*1 along the Y axis. The tense phonemes are indicated with solid circles, and the lax phonemes are indicated with open circles; other vowel nuclei, marked with triangles, are the means of several tokens, which were included to anchor the short *a* tokens in the vowel systems as a whole. Figure 1 reveals that, for Jenny, the tense and lax phonemes were completely separated. In fact, there was far less overlap here than one generally sees between two adjacent phonemes such as /iy/ and /ey/. The phonetic targets for the two phonemes were widely separated, with lax short *a* quite low and tense short *a* between /ey/ and /iy/.<sup>2</sup> As can be seen in Figure 2, Danny's vowel system was similar. The one overlapping token in Danny's chart was *that*, which he produced with a tense short *a*; this word is usually produced with a lax short *a* in the Philadelphia system. Generally, however, his lax /ae/ was also low, and the tense /aeh/ was near the /ey/ phoneme. Clearly, these two children had two distinct short *a* segments.

For the purpose of this study, it was important not only to show that the children had acquired the two short *a* segments, but also to explore whether they had matched the segment to the appropriate linguistic environment. To accomplish this, we compared the short *a* systems of the children as a group to those of their parents and the Philadelphia adults studied in Labov (1989b).

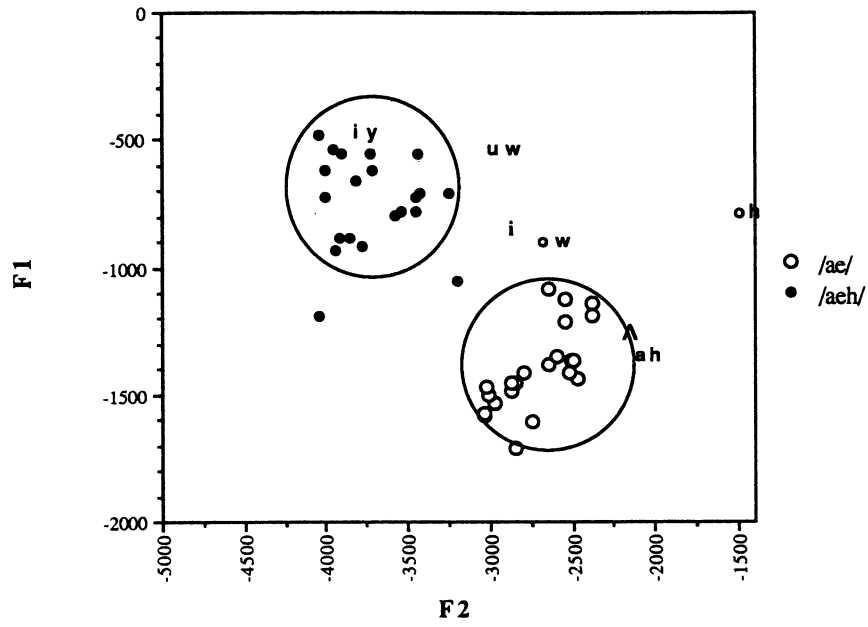


FIGURE 1. Vowel chart for Jenny (age 3;11).

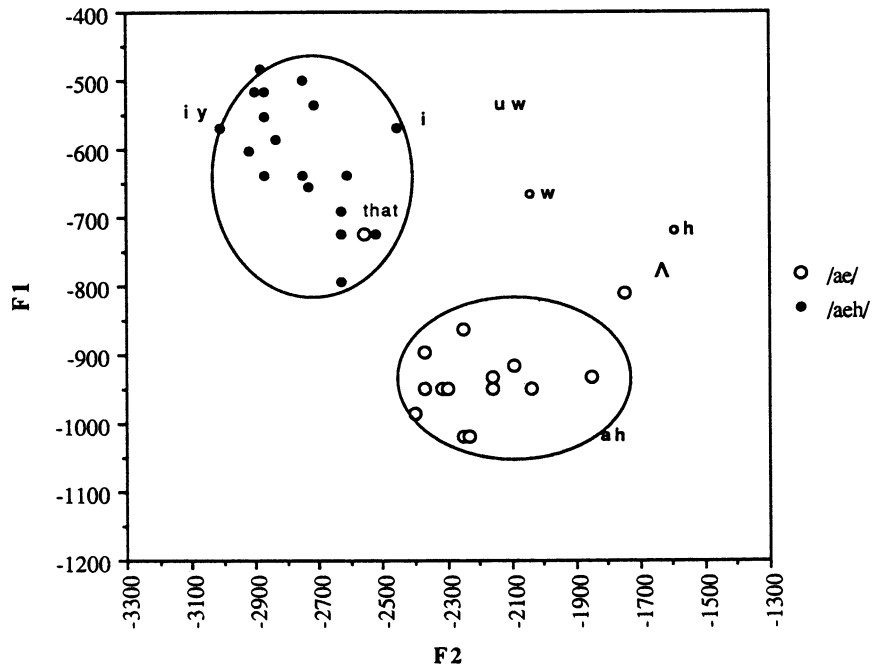


FIGURE 2. Vowel chart for Danny (age 4;10).

TABLE 1. *Distribution of tense/lax forms of short a for Philadelphia adults and children*

	Adults 8-80 1974-77		Children 3-5 1990		Parents 1990	
	N	Tense (%)	N	Tense (%)	N	Tense (%)
___/l/	131	22	116	65		
<i>Sally</i>	5	60	54	65		
<i>alligator</i>			32	69		
<i>Allen</i>	2	50	26	69		
Others			4	100	3	100
___/nV/	256	0.04	250	57		
<i>planet</i>	17	18	134	93		
<i>Janet</i>	3	0	41	37		
<i>hammer</i>	3	0	28	4		
<i>camera</i>			47	4	1	0
# ___/nV/	21	0				
<i>animal</i>	14	0	51	0	2	0
___/n/\$	1,308	97	105	99	2	100
<i>sandals</i>			72	99	1	100
Others			33	100	1	100
___/nC/# or ___/n/#			30	97	3	66
<i>mad</i>	73	100	117	99	9	100
<i>bad</i>	143	100	57	100	21	100
<i>glad</i>	19	95	6	100		
<i>sad</i>	14	0	135	0	1	0
___/f/	351	98	72	76	14	100
___/s/	513	98	65	80	12	100
___/th/	43	100	109	94	3	100
___/ngk/	9	0	9	0		
___/sh/	66	2	14	29	1	0
___ Other C°	1,299	1	184	2	17	6
___ Other C <sup>v</sup>	439	1	72	1	5	0

Source: For adults, aged 8-80, Labov (1989b).

As shown in Table 1, the two groups of adults were extremely similar in their short *a* systems. The children had acquired short *a* to a large extent. They consistently tensed short *a* preceding a nasal and a syllable boundary, as in *sandals* and in the lexical items *mad*, *bad*, and *glad*. On the other hand, like the adults, they never tensed it in the word *sad* or in the initial short *a* followed by a nasal and vowel environment, as in *animal*. They were more variable in their productions of short *a* preceding /f/, /s/ and /th/, an environment which will be discussed a little later.

Let us first look at the environments undergoing change—those of short *a* preceding /l/, and intervocalic nasals. For tensed short *a* before /l/, there was a difference between the adults at 22% and the children at 65%.

Although this difference may indicate that the children were participating in this change and even moving it forward, the individual words *Sally*, *alligator*, and *Allen* were not helpful in further examining this environment. There were few adult tokens, and those that were present tended to be tensed. The environment of intervocalic nasals was better for exploring the role of the children in this change in progress. It showed an even greater difference in the percentage of tensing, from .04% by the adults to 57% by the children. There was also a difference in tensing in the word *planet*, at 18% by the adults and 93% by the children.

It is interesting to contrast the items *Janet* and *planet* because of their similar phonetic forms. One might expect *planet* to have the more lax vowel due to the preceding /l/, but this was not the case. The selection by the Philadelphia speech community of the lexical item *planet* for tensing was arbitrary; however, it was one that the children appeared to have acquired. Their acquisition of this distinction is more interesting in that the children did not appear to know the word *planet* when it was first introduced to them in the picture game. None of them labeled it on their own, but this is not conclusive evidence, since they might have known the word *planet*, but not recognized the picture as a planet. Some of the children, however, did not appear to recognize the word when it was produced for them, taking several trials to imitate it. Since the interviewer is not a Philadelphian, and her own production of the short *a* in *planet* is lower than that in *Janet*, it is not possible that they accessed this community norm from her. However, in listening to the tapes again, a bit of interaction was discovered that provides a clue to the puzzle. In Jenny's second session, she was shown the picture of *planet*. Her response was "ball." The interviewer responded, "No, remember, we learned this word last time. It's planet." Jenny replied, "Planet. Oh, ET lives on a planet," demonstrating at least one other context in which she had access to the word and its Philadelphia pronunciation. It seems possible that, although the children did not readily recall the word *planet*, they had heard it before, and once they were reintroduced to it, they were able to access the community's norms which were evident in their tense productions of the short *a* in *planet*.

The contrasting example here is *Janet*. The adults studied in 1974–77 produced only three of these tokens, none of which were tense. The children produced 41, 37% of which were tense. Although it is impossible to generalize with complete confidence on so little adult data, it seems reasonable to assume that, since there were no tense productions in three tokens of *Janet* and three tokens of *hammer* in the adult studies in 1974–77, and one token of *camera* in the adults studied in 1990, this is an environment in which short *a* is seldom if ever tensed, except in specific arbitrary exceptions like *planet*. Since the children, on the other hand, produced 15 tense tokens in this environment (not including those in *planet*), it seems that they had not fully acquired the short *a* system in this environment. The language acquisition literature tells us that children are particularly prone to overgeneralization during this critical language learning period, and it is possible that this is what



TABLE 2. *Distribution of tense/lax forms of short a for 3- and 4-year-old Philadelphia children*

	Ages 3;2 to 3;10 (7 children)		Ages 3;11 to 4;11 (10 children)	
	N	Tense (%)	N	Tense (%)
___/l/	52	46	64	86*
<i>Sally</i>	27	41	27	89*
<i>alligator</i>	16	44	16	94*
<i>Allen</i>	9	67	17	71
Others			4	100
___/nV/	132	52	130	60
<i>planet</i>	60	90	74	96**
<i>Janet</i>	20	65	21	10*
<i>hammer</i>	14	7	14	0
<i>camera</i>	33	3	14	7
# ___/nV/				
<i>animal</i>	21	0	30	0
___/n/\$	45	98	60	100
<i>sandals</i>	36	97	36	100
Others	9	100	24	100
___/nC/# or ___/n/#	3	100	11	100
<i>mad</i>	55	100	62	98
<i>bad</i>	27	100	30	100
<i>glad</i>			6	100
<i>sad</i>	54	0	81	0
___/f/	37	70	35	83
___/s/	24	67	41	88**
___/th/	42	88	67	97
___/ngk/	4	0	5	0
___/sh/	4	25	10	30
___ Other C <sup>o</sup>	72	0	111	2
___ Other C <sup>v</sup>	21	0	51	2

\* $p < .01$ ; \*\* $p < .05$ .

was occurring here (see Bowerman, 1982; Kuczaj, 1977; Marchman, 1988; Marcus, Ullman, Pinker, Hollander, Rosen, & Xu, 1990; among others). Specifically, the tensing in words like *planet* may be overgeneralized to other words in that category, particularly *Janet*.

In order to look more deeply at this possibility, we divided the children into two groups by age, as seen in Table 2. There were 7 children in the younger group, aged 3;2 to 3;10, and 10 children in the second group, aged 3;11 to 4;11. As shown in the entries after *planet* and *Janet*, there were differences between the two groups. There was a small but significant increase in the tensing of short *a* in *planet*. Also important, however, was the decrease in the tensing of the short *a* in *Janet* from 65% to 10%, which is significant at the .01 level. Moreover, there were no instances of tense short *a* in *hammer*

among the 4-year-olds and one instance for each of the groups of tense short *a* in *camera*.

It appears that the 3- to 4-year age level is a critical period for the acquisition of dialectal norms of the speech community, just as it is for language learning in general and, as recent research shows, for variation in particular. Support for this position also comes from other short *a* environments. When short *a* precedes /l/, the 4-year-olds were significantly more likely than the 3-year-olds to tense it, as demonstrated especially in the words *Sally* and *alligator*. The 3-year-olds did show tensing of short *a* before /l/, but it was the 4-year-olds who were tensing short *a* in this environment, far more than the adults studied in 1974–77 did. Further evidence for this growth in learning at the 3- to 4-year age level comes from the environment before /s/. Here, too, there is a significant increase of tensing in an environment in which tense short *a* is reliably present in adult speech. The same cannot be said of the short *a* before /f/ environment in which the difference between the 3- and 4-year-olds was not significant. A closer look at the data reveals one possible explanation for this. The 3-year-olds used lax forms in 11 of the 37 tokens in which short *a* preceded /f/, and the 4-year-olds used lax forms in 6 out of 35. Three of the 6 lax tokens for the 4-year-olds came from Gia, whose mother was not raised in Philadelphia. Although Gia had acquired most of the Philadelphia short *a* pattern, she consistently laxed short *a* before /f/. If her data are eliminated from this category, the results are significant at the .05 level.

The argument could be made that, for all of these environments, the over-generalization process, which is so common in early language learning, might be operating to encourage the increased tensing of short *a* in any environment where it exists. However, the fact that there was a decrease in tensing in the word *Janet* at the same time as there was an increase in the other environments does not support this argument. Rather, it seems that the children were actively learning the norms for the short *a* system from the speech community, while at the same time participating in the lexical diffusion in progress.

#### SUMMARY AND CONCLUSIONS

The goals of this article were to track the transmission of the short *a* pattern from one generation to another, as well as to add to the large body of knowledge on child language acquisition by examining how children acquire the Philadelphia distribution of short *a*. In spite of the complexity of the Philadelphia short *a* system, the children made great strides in acquiring the community norms for these phonemes by age 3. The two children whose vowels were analyzed showed a striking separation of the two segments of short *a*; the tokens of the other children, although not analyzed instrumentally, were easily distinguishable as tense or lax.

Just as the acquisition of much of language continues throughout this pre-school period, the 3- to 4-year age level is also an active one for the learning of short *a*. The children had learned the system in some of the environments, such as *mad*, *bad*, and *glad*, but not *sad* and that of short *a* preceding nasals and consonants or syllable boundaries. At the same time, there were other environments that were being learned throughout this period. Most important were those environments which are undergoing lexical change in progress – short *a* before /l/ and before intervocalic /n/. In both of these instances, the children appeared to be participating in the change by demonstrating increased tensing in these environments, as compared with adults studied in 1974–77. Further, they were demonstrating growth in their acquisition of this system in that, between the ages of 3 and 4, they showed increased adoption of the community norms. Although the common learning process of over-generalization may account for the comparatively high percentage of tensing in the word *Janet* by the 3-year-olds, its influence was clearly decreasing throughout the next year, since the 4-year-olds not only showed decreased tensing in *Janet*, but also increased tensing in the commonly tensed *planet*.

In summary, the results show that these 3- and 4-year-old children were both accessing the norms of the speech community and participating in its change in progress. The preschool period is a critical one for language learning. It includes the acquisition of categorical grammatical rules, variable rules, and, as this study shows, the Philadelphia distribution of short *a*. Finally, these findings emphasize the active participation of very young children in their speech community and the necessity of their inclusion in its complete description.

## NOTES

1. The day care center, as well as all of the participants in this study, were given pseudonyms to protect their privacy.
2. There are indications in these charts that the children had acquired other Philadelphia variables as well. For example, the nuclei of /uw/, /ow/, and /aw/ are fronted as would be predicted in speakers of the Philadelphia dialect.

## REFERENCES

- Bowerman, Melissa. (1982). Starting to talk worse: Clues to language acquisition from children's late errors. In S. Strauss (ed.), *U-shaped behavioral growth*. New York: Academic.
- Ferguson, Charles A. (1975). 'Short a' in Philadelphia English. In M. Estelle Smith (ed.), *Studies in linguistics: In honor of George L. Trager*. The Hague: Mouton.
- Guy, Gregory, & Boyd, Sally. (1990). The development of a morphological class. *Language Variation and Change* 2:1–18.
- Hindle, Donald. (1980). The social and situational conditioning of phonetic variation. Doctoral dissertation, University of Pennsylvania.
- Kuczaj, S. A. (1977). The acquisition of regular and irregular past tense forms. *Journal of Verbal Learning and Verbal Behavior* 15:589–600.
- Labov, William. (1980). The social origins of sound change. In William Labov (ed.), *Locating language in time and space*. New York: Academic.
- \_\_\_\_\_. (1989a). The child as linguistic historian. *Language Variation and Change* 1:85–98.

- \_\_\_\_\_. (1989b). Exact description of the speech community: Short a in Philadelphia. In Ralph Fasold & Deborah Schiffrin (eds.), *Language change and variation*. Amsterdam: John Benjamins.
- Labov, William, Yaeger, M., & Steiner, R. (1972). *A quantitative study of sound change in progress*. Philadelphia: U.S. Regional Survey.
- Marchman, Virginia. (1988). Rules and regularities in the acquisition of the English past tense. *Center for Research in Language Newsletter*, 2 April.
- Marcus, Gary, Ullman, Michael, Pinker, Steven, Hollander, Michelle, Rosen, T. John, & Xu, Fei. (1990). *Overregularization*. (Occasional paper #41.) Cambridge, MA: The Center for Cognitive Science, MIT.
- Payne, Arvilla. (1980). Factors controlling the acquisition of the Philadelphia dialect by out-of-state children. In William Labov (ed.), *Locating language in time and space*. New York: Academic.
- Roberts, Julie. (1994). *Acquisition of variable rules: (-t,d) deletion and (ing) production in pre-school children*. Doctoral dissertation, University of Pennsylvania.
- Trager, George L. (1930). The pronunciation of 'short a' in American Standard English. *American Speech* 5:396-400.