The child as linguistic historian

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ABSTRACT

Though the diachronic dimension of linguistic variation is often identified with linguistic change, many stable linguistic variables with no synchronic motivation show historical continuity with little change over long periods of time. Children acquire at an early age historically transmitted constraints on variables that appear to have no communicative significance, such as the grammatical conditioning of (ING) in English. Studies of (TD) and (ING) in King of Prussia families show that children have matched their parents' patterns of variation by age 7, before many categorical phonological and grammatical rules are established. Some dialect-specific and socially marked constraints are acquired before constraints with general articulatory motivation. Constraints on (TD) appear in the speech of a 4-year-old, but there is no evidence in the productions of a 2-year-old child in the same family.

One of the strongest arguments for the separation of synchronic and diachronic linguistics is that children do not know the history of the language they are learning. As the grammar of the language must be the rule system that is learned and internalized by the language learner, and the child is ignorant of its history, it follows that historical linguistics is irrelevant for students of synchronic linguistics.

This principle seems perfectly clear in responding to people who would reject *automobile* as a barbarism — because it is half Greek and half Latin — in favor of *autokineton*. But recent research on variable patterns of language production shows that the principle is not as firm as it once seemed. In many ways, the child is a perfect historian of the language.

It is clear that children inherit the history of the language as they learn it, as every construction, every word, every sound and vocal gesture of their local dialect is the product of an historical evolution. All language is an historical residue, except perhaps for that shimmering target of formal linguistics, the principles of innate and universal grammar. In general, the language learner would not benefit from knowing where all of this linguistic detritus comes from, and very often, we cannot tell as observers of the synchronic scene what has come from what. (1) lists some isolated historical residues that are more or less opaque to synchronic analysis.

(1) Some isolated synchronic residues of historical processes
    a. The zero genitive singular: *ladybird, ladybug*
    b. Isolated lexemes: *kith and kin, might and main*
    c. Re-cutting: **a nadder** → *an adder*
    d. Mergers: /æy/ → /æ:/ *maid = made*
              /ohr/ → /ɔhr/: *four = for*
    e. Near mergers: Early Middle English (E.M.E.) *meat = mate → meat = meet*
    f. Nonstandard alternations: Old English (O.E.) **āscian, ācsian** → *æsk, æks*

Ladybird or *ladybug* shows the unregularized reflex of the Old English feminine genitive *ladie*, with the original meaning of 'bird of our lady'. For the modern language learner, *lady* operates here as a simple noun adjunct, with the meaning 'ladylike bird'. The same perseverance of the *-e* feminine genitive shows up in *Friday*, but the contrast with the *-s* genitive in *Thursday* 'Thor's day' puzzles no one. In the cases listed under (1b), there is nothing in the language today that tells us that *kith* means 'kin' or that *main* means 'might'. *Adder* in (1c) is derived by recutting from *a nadder,* but there is nothing in the current language that separates it from *an eel*.

The results of historical mergers are not as a rule recoverable by the child or the analyst. (1d) indicates mergers that are absolutely irrecoverable for the dialects that have submitted to them. Philadelphians cannot guess how the older residents of Norwich separated *maid* from *made,* nor how Texans separate *four* from *for.*

So far, so opaque. But when we come to the near mergers of (1e), we find that the present is the clue to the past. In the 16th century, it was widely reported that the M.E. **ea** class, as in *meat*, was homonymous with the long **ā** class, as in *mate;* but in the 17th century, it appeared that the *meat* class had merged with the M.E. long **ē** class, as in *meet*. Studies of comparable situations in present-day dialects indicated that the reported merger of *meat* and *mate* might well be a case when speakers made a difference that they could not label (Labov, 1975a). Milroy and Harris (1980) showed that this was the case for the very same variable in Belfast, where older speakers did differentiate *meat* from *mate* in production, although they could not recognize the difference on conscious reflection. This supported the earlier inference that in 16th-century London there was a similar near-merger.

Case (1f) introduces the main theme of this article, the persistence of historical patterns. Why do people say /æks/ instead of /æsk/? The popular view is that /æsk/ is hard to say, and that /æks/ is easier. But this argument does not take into account the fact that the same speakers do not say /deks/ for /desk/ or metathesize any other /sk/ combination. It appears that the reason we say /æks/ is that we've always said it. The speakers of the language preserve its history in its variable aspects, even more than its invariant aspects. In any Old English dictionary, we will find **ācsian** listed alongside of **āscian,** and in Middle English **axien** is not uncommon.[1]

The last two cases introduce a way of connecting diachrony and syn-

chrony that is quite different from the usual conception. From the beginning of current sociolinguistic studies, many scholars have sought to add a dynamic dimension to their linguistic descriptions. Changes in progress were actively pursued, and many students of variation found change where there was none to find. Some proposed that every variable represented a change in progress and thought that one could easily and automatically read the direction of change from this synchronic map (Bailey, 1972). These ambitions were quickly defeated as it became apparent that stable variables like English auxiliary contraction, -*t, d* deletion, and the aspiration and deletion of Spanish /s/ were the normal case: that unstable ones were relatively rare. As we continue this line of observation, there is more and more reason to question the common tendency to equate the study of language history with the study of language change.

The presence of change in progress still provides us with some of the greatest intellectual challenges for explanation and understanding. Yet there is something even more challenging and puzzling than change, and that is the absence of change. Cases (1e) and (1f) illustrate the kinds of historical continuity that can challenge our imagination. How is it possible that a particular variation continued and was preserved, not only across generations, but across centuries and even millenia?

The case that brought this home most forcibly is the variable (ING), which operates in the same way across the English-speaking world, in England, America, Canada, and Australia (Fischer, 1958; Labov, 1966; Shopen & Wald, 1982; Trudgill, 1974). I had originally approached it as a synchronic rule—one of the many final weakenings that substitute apical for velar nasals in unstressed syllables. But in the early 1980s, a grammatical conditioning appeared that had never been suspected[2] and that had no intuitive correlate. /in/ was favored most in progressives and participles, less in adjectives, even less in gerunds and least of all in nouns like *ceiling* and *morning*. Shopen and Wald (1982) independently found the same conditioning in Australia. Since then, every study of (ING) for almost every speaker has shown the same result. No synchronic explanation for this fact has yet been found. But from an historical point of view, [ɪn] in *workin'* was the regular result that would be produced by sound changes operating on the O.E. **-inde** participle: by reduction of /e/ to shwa, loss of final shwa, and simplification of the **-nd-** cluster in unstressed syllables. On the other hand, /ing/ was the regular reflex of the verbal noun spelled **-inge** or **-ynge.** Though teachers and linguists alike had characterized the *working/workin'* alternation as the deletion of an underlying /g/, this grammatical conditioning suggested that it was something entirely different—a continuation of a geographic alternation of late Old English, which had become transformed into a social and stylistic variable. Houston (1985) explored this question in detail and found considerable evidence to confirm this hypothesis.

Figure 1 shows one of the many types of evidence that led Houston to the conclusion that the modern -*ing/-in'* alternation had a continuous history

Glasgow .38 Edinburgh
.38

Gateshead
.08

Leeds
.47
Liverpool .11
.63 Manchester
.85 Birmingham
Norwich
.42
Essex
.89
.49
Cardiff Bristol .67
.42 .63 London
.51 .58 .56

.nn ●   probabilities for velar -ing
         form in modern British cities

- - -   Northern limits of the -ing
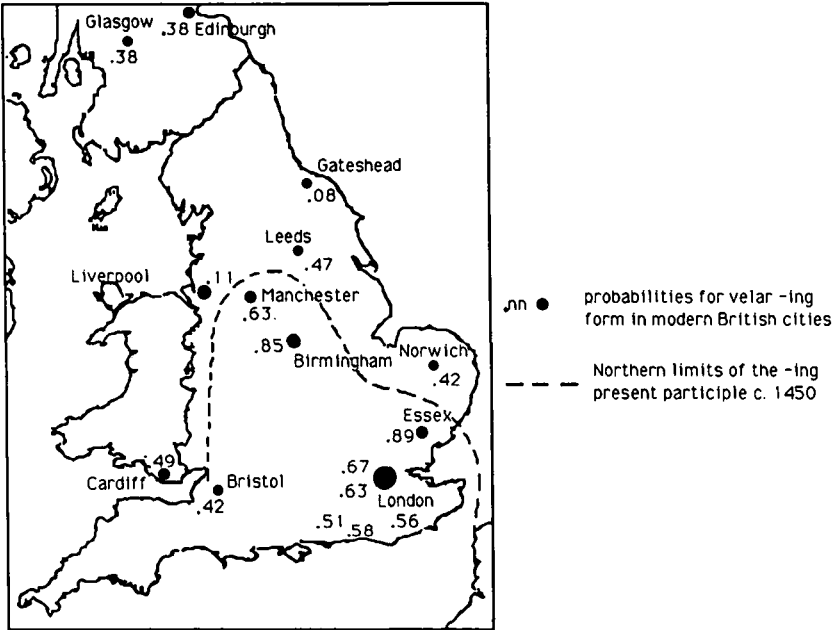   present participle c. 1450

FIGURE 1: The relation of the modern /ing/ ~ /in/ alternation to the distribution of -ing in the 15th century (from Map 4.4 in Houston, 1985).

originating in the O.E. verbal noun and participle. It reflects the fact that the participle was not uniformly -ing in E.M.E.; there was a geographic split where -ing predominated in the south of England and -in in the north. Figure 1 shows that the transformation of the geographic variable into a social and stylistic variable is far from complete. On the map of England are located the cities where I had carried out exploratory studies in the 1970s. Houston did a variable rule analysis of the variable (ING) for 60 speakers in the 16 communities indicated in Figure 1. The numbers show the overall probability of the /in/ variant. It appears that the distribution of modern (ING) fits the line established by Moore, Meach, and Whitehall (1935) as the northern limit of the -ing present participle in the 15th century. Within this line, values are above .5; outside it, less than .5. It follows that the areas where /in/ predominates inherited the -inde participle, and the predominance of /in/ in the noun is a continuation of the O.E. verbal noun in -ing.

An even more striking example of historical continuity emerged in the study of contraction and deletion of the Black English copula and auxiliary. A series of observations by Frank Anshen, Ralph Fasold, and John Holm led John Baugh to a quantitative restudy of the variable in our Harlem data (Baugh, 1980). He found an exception to the general principle that constraints on contraction were parallel to constraints on deletion: a distribu-

tion that favored contracted forms before locatives but zero forms before adjectives. This grammatical conditioning could best be explained by historical continuity with the category structures of Caribbean creoles, where adjectives were stative verbs but locatives were introduced by copula forms. In his major study in the Los Angeles area, Baugh (1979) found the same distribution, and we have since replicated it in Philadelphia.

The common characteristics of these two variables are:

a stable grammatical conditioning that holds for every individual speaker;
no synchronic explanation available;
no communicative value evident;
a present-day quantitative reflection of earlier qualitative differences;
integration into a stable pattern of social and stylistic variation; and
the clear implication that the historical pattern is replicated by successive generations of children who acquire the detailed pattern of constraints on the variation as they learn the language.

In other words, children acquire and transmit these historical patterns. These are not brute facts like the spellings in (1a–c); they are abstract and productive patterns that are part of the rule systems of the language.

But how or when do children acquire variable constraints on rules and alternations? There are still many linguists who do not believe that language-specific variation is acquired; they would like to relegate all of these data to a universal, innate, and automatic set of constraints on articulation and rule formation (Bickerton, 1981; Kiparsky, 1982). To show how such language-specific variation is transmitted, it will be helpful to examine variation within families, with the youngest children that we can extract quantitative data from. This article reports an analysis of the speech of children under 10 in the Philadelphia area, drawing on middle-class families in the King of Prussia area interviewed by Arvilla Payne.
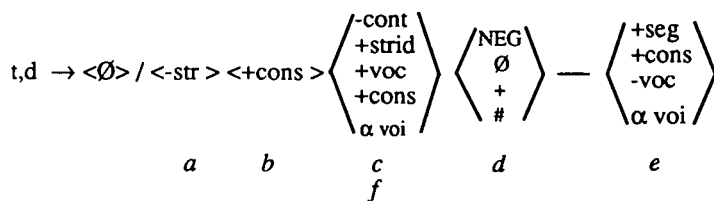
The King of Prussia interviews have several advantages for this purpose. It is not a simple matter to obtain large bodies of spontaneous speech from very young children. Payne's methods in the King of Prussia study (1976) developed considerable familiarity with the many families involved, and her interviews profited from intimate social relationships with parents and children, which are normally available only to those who depend on pre-established family and kinship connections.

This study is primarily concerned with the family to be called the Camerons. David Cameron was very talkative at age 7, and we have three full hours of speech from his father, Curt, and his mother, Kay. Curt was raised in Norristown, within the Philadelphia area, and Kay was from Columbus and Cincinnati. For the study of (TD), local origin is not essential, because all constraints are parallel across dialects of English, except for one factor — the effect of a following pause (Guy, 1980; Labov, 1975b).

To investigate the acquisition of variable constraints, no variable is more

attractive than (TD): the deletion of apical stops in final clusters. This variable is well established in the history of English and shows most of the properties listed earlier. (2) is a detailed description of the variable as we know it from work done by Labov, Cohen, Robins, and Lewis in Harlem (1968), Wolfram in Detroit (1969), Fasold in Washington (1972), Guy in Philadelphia (1980).

(2) The (TD) variable:

$$
t,d \rightarrow <\emptyset> / <\text{-str}> <+\text{cons}> \left\langle \begin{matrix} -\text{cont} \\ +\text{strid} \\ +\text{voc} \\ +\text{cons} \\ \alpha\,\text{voi} \end{matrix} \right\rangle \left\langle \begin{matrix} \text{NEG} \\ \emptyset \\ + \\ \# \end{matrix} \right\rangle \underline{\quad\quad} \left\langle \begin{matrix} +\text{seg} \\ +\text{cons} \\ -\text{voc} \\ \alpha\,\text{voi} \end{matrix} \right\rangle
$$

$$\quad\quad\quad\quad a \quad\quad\quad b \quad\quad\quad\quad c \quad\quad\quad\quad d \quad\quad\quad\quad e$$
$$\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad f$$

Rule application is favored:
- *a* in **unstressed syllables.**
- *b* if **a third consonant** precedes the consonant cluster.
- *c* by the phonetic features of **the preceding consonant,** yielding the segmental order /s/ > stops > nasals > other fricatives > liquids; a relatively weak constraint.
- *d* by **the grammatical status** of the final /t/, with the order: part of *-n't* morpheme > part of stem > derivational suffix > past tense or past ptc suffix.
- *e* by the phonetic features of **the following segment,** yielding the order: obstruents > liquids > glides > vowels > pause.
- *f* by **agreement in voicing** of the segments preceding and following the /t,d/ (homovoiced > heterovoiced).

EXCLUSIONS: the word *and* is excluded from the variable.

NEUTRALIZATIONS: the variable is neutralized when the following segment is an apical or palatal stop or interdental fricative.

INTERSECTION WITH OTHER RULES: *Nasal flap formation.* All tokens with /t,d/ preceded by /n/ and followed by a vowel are excluded from the data.

Figure 2 shows the output of a variable rule analysis of the Camerons' speech using the GoldVarb implementation of VARBRUL on the Macintosh. The first factor group to be considered is the influence of the following segment (2e). The group contains two distinct types of factors. One set differentiates segments according to the sonority or syllabification hierarchy: obstruents, liquids, glides, and vowels, favoring deletion in that order. The other opposes segment to no segment, or pause. As Guy (1980) has shown, this factor is an arbitrary one, open to dialect-differentiation. In Philadelphia, pause is the least favoring environment for deletion; in New York City, it is the most favoring. If we believe that universally motivated factors would
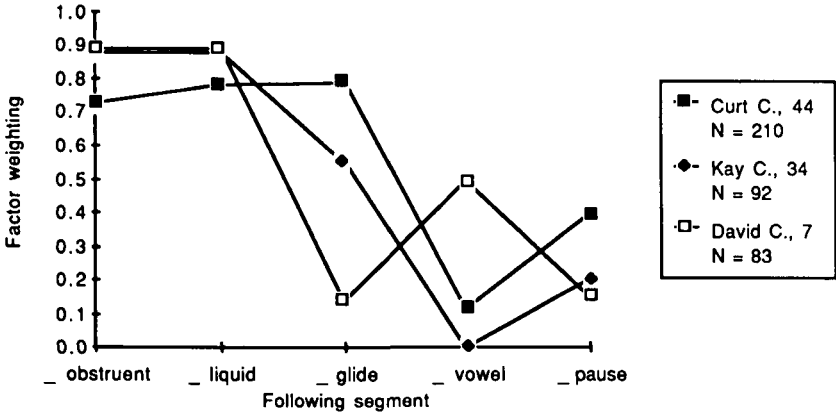
FIGURE 2: Conditioning of (TD) by the following segment in the Cameron family, King of Prussia. Rule application: Deletion of -t,d.
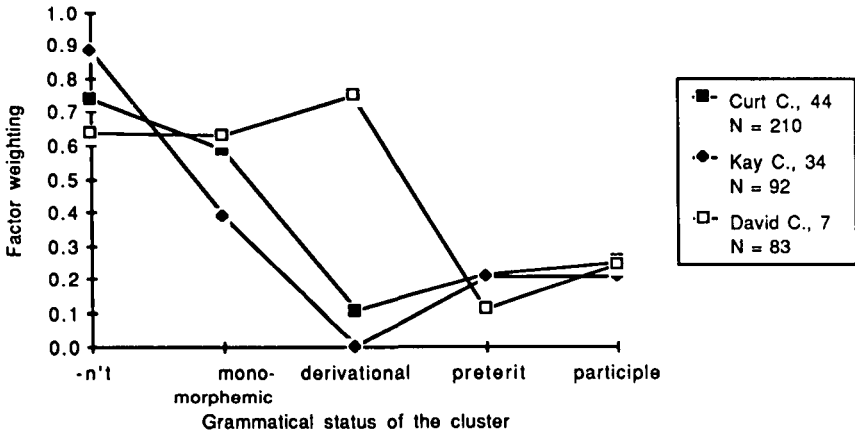

FIGURE 3: Grammatical conditioning of (TD) in the Cameron family.

be acquired first by children, we would expect that the effect of pause would be acquired later than the other factors within this group. Figure 2 shows the opposite. Husband and wife are in lockstep across the pattern. David reverses the relation of vowel to glide found in the adult pattern. But his low figure for the effect of pause fits the Philadelphia pattern perfectly.

Figure 3 shows the grammatical factor group. Again, husband and wife are in close agreement, even though the wife shows only 92 tokens. By contrast with Figure 2, David shows close agreement with his parents except for the derivational group: *told, kept, lost,* and so forth. This is just what we
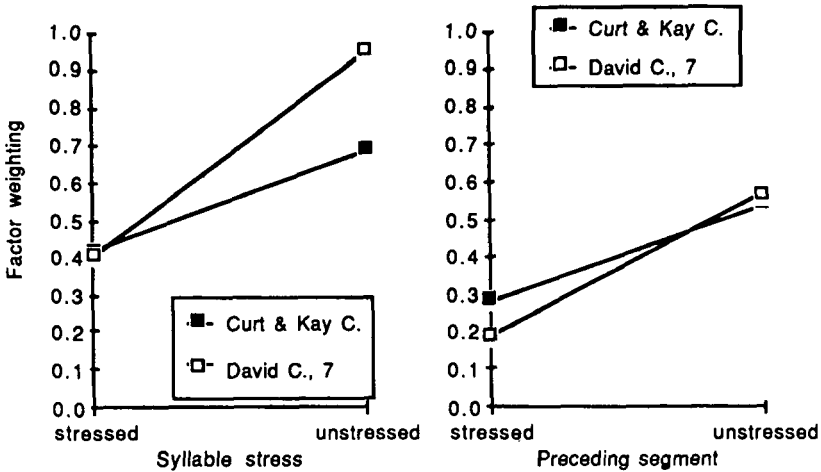
FIGURE 4: Two phonetic constraints on (TD) in the Cameron family.

would expect from Boyd and Guy's (1979) work on this variable. The derivational or "ambiguous" class is the only one that shows extensive individual variation. In the analysis of constraints on (TD) for 37 speakers, Boyd and Guy found a significant correlation with age. The age continuum shows a steady decline in the effect of this factor on deletion, but it can be divided into three discrete types. The youngest speakers treat these words as if they had no final consonant at all. The next group, like David, treat them like monomorphemic -/t,d/: In other words, they do not analyze these words into stems and suffixes. Older speakers show more and more tendency to treat these derivational affixes in the same way as past-tense inflections, which is the case with the Cameron parents: There is no significant difference between the ambiguous class and the past-tense suffixes for both husband and wife.

To sum up, Figure 3 shows that David has more success in reproducing the adult model in the abstract, language-specific constraints than the concrete, apparently universal articulatory constraints, except for the one category that he has not fully analyzed. David's rule system constrains deletion of /t/ or /d/ if these segments are separate morphemes. Thus, the rule is not learned by probability matching of the separate verbs or subcategories of verbs; if that were so, he would have matched his parents' probabilities for the ambiguous class. The probability matching involved here utilizes a general formulation that applies to all words. Consequently, David's output is split into one set of factors with very low values, even lower than his parents, and a smaller number with high deletion probability assigned to the monomorphemic class.

Figure 4 shows that David has also acquired the two other phonetic constraints on (TD). As these depend on relatively rare categories, husband's and
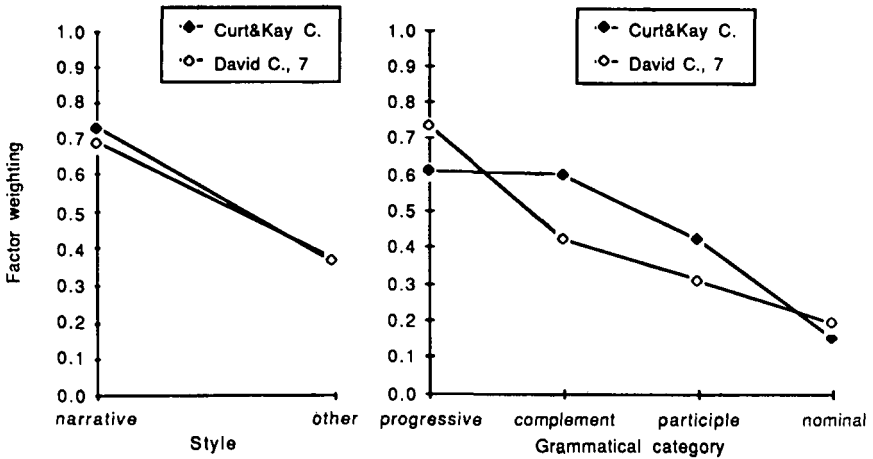
FIGURE 5: Stylistic and grammatical constraints on (ING) in the Cameron family. Rule application: /in/.

wife's tokens are grouped together. David shows an even stronger tendency than his parents to favor deletion in unstressed syllables. We also see that a third preceding consonant favors deletion (as in *next* and *wouldn't*). Here again, David has an even greater differentiation than his parents. In this case, general articulatory constraints are acquired early.

In Figure 5, we turn to the variable discussed at the outset, (ING). At left is the stylistic factor, opposing narrative to all other styles. On the right is the grammatical conditioning, where verbal forms favor the /in/ variant and nominal forms favor /iŋ/. Again, David has acquired the abstract grammatical pattern in a form even more highly differentiated than his parents.

Figure 6 shows (ING) for three King of Prussia children: 6-year-old Cynthia, 7-year-old David, and 9-year-old Marjorie. Because these data are limited, the vertical axis is simply the raw percentage of each variable. The major differences that emerge from this comparison are that the 6-year-old has acquired the stylistic constraint, but not the grammatical one, and it seems that the stylistic control of (ING) is stronger and learned earlier than the grammatical pattern.

Though David has shown a mastery of variable constraints on (TD) and (ING), except for the ambiguous (TD) cases, he has certainly not mastered the adult grammar in other respects. Table 1 shows David's deviations from adult grammar in an hour's worth of speech. The left column shows that he has not yet acquired English articulation for such difficult words as *breakfast*, *mischief*, and *suction*. He says [brɛfdɪsk] and [mɪsčɪs] and [sʌčɪŋ]. All of these involve consonant clusters in one position or another and show metathesis, reanalysis, or perseveration. It is evident that David's control of abstract concepts like the effect of morpheme boundaries precedes his con-
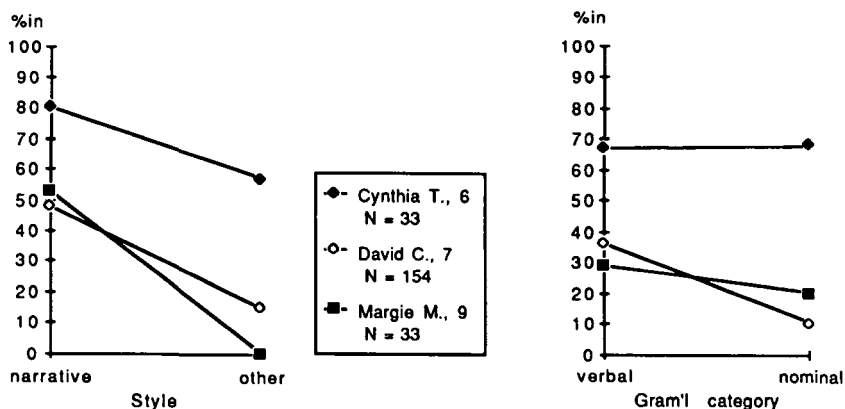
FIGURE 6: The acquisition of stylistic and grammatical constraints on (ING) for three King of Prussia children.

TABLE 1. *Deviations from adult grammar in the speech of David Cameron, 7, King of Prussia*

Phonology	Morphology	Syntax	Hypercorrection
[brɛfdɪsk] 'breakfast'	baddest	luckily that we escaped	we're backed, 'we're back!'
[mɪsčɪs] 'mischief'	put up on our shelfs	have to come up for an air[a]	
[sʌčɪŋkʌp] 'suction cup'	are freezed, 'are frozen' he shift the gear 'he shifted...' I teared, 'I tore [ran]'	we have a desks[a]	

[a]From friend Marty Brown, 7.

trol of articulatory factors. The example "We're backed!"—a hypercorrection never heard from adults—shows the effects of his strong focus on grammatical clusters in final position. The examples of morphological and syntactic deviations from adult grammar show that the acquisition of variable rules precedes the acquisition of many other features of the grammar.

We can move downward in the age range to consider Andy Carter, a talkative 4-year-old recorded by Payne in King of Prussia (Table 2). All of the (TD) data are listed at left.

For monomorphemic forms, we find more consistent articulation of the cluster in final position than in prevocalic position. Intact clusters appear in *round, sand, fast,* and *left,* whereas /t/ is deleted in *just a minute* and *first*

TABLE 2. *Phonological variation of Andy Carter, 4, King of Prussia*

-t, d deletion	-ing/-in	Other
Monomorphemic	Future	-CC- clusters
Preconsonantal	gonna come out	-ts- clusters
las' thing	gonna get	[ðæts] 'that's'
buil' castle	gonna go	[aʊsaɪd] 'outside'
first one		[ɪs] 'it's'
Prevocalic	Progressive	-st- clusters
jus' a minute	*been bugging*	[rustər] 'rooster'
firs' and	she's watchin' me	[jɛsərdeɪ] 'yesterday'
Final		Intervocalic -t-
round	Gerunds	[hɪpopɑəməs] 'hippopotamus'
fast	swimmin' pool	[gɛɪn] 'getting'
sand	fishin' boat	
left		Liquids and Glides
-n't suffix	-thing words	[swaɪd] 'slide'
don't know	nothin'	[bərd] 'word'
		[foˤʊt] 'float'
Past Tense		[pælə boʊt] 'power boat'
brushed it off		[laɪfgɑrd] 'life guard'
baby named John		[gəwɪləz] 'gorillas'
		[wɪəɫ fɪŋ] 'little thing'

and. At the bottom of the column are two clear enunciations of past tense *-ed* before a vowel in *brushed it off* and (even more remarkably) *a baby named John*.[3] These examples show a pattern parallel to that found for 7-year-old David in the quantitative analysis of Figure 2. There is some evidence of a focus on the language-specific past-tense constraint and the dialect-specific final pause constraint that was observed for David.

The right-hand column of Table 2 shows that Andy has yet to acquire articulatory control over other clusters and individual consonants as well. There is variable articulation of intervocalic /-ts-/ clusters in *that's, outside,* and *it's*. There is also variation in intervocalic /-st-/ clusters in *rooster* and *yesterday,* and deletion of intervocalic /-t-/ in *hippopotamus* and *getting*. Furthermore, we find a great many deviations from the adult forms of liquids and glides. /l/ is realized as /w/ in *slide* and *little thing* and is deleted in *float* but is intact in *lifeguard;* /r/ appears as /w/ in *gorillas;* and /w/ is realized as /l/ in *power boat*.

The middle column shows the (ING) forms used by Andy Carter. The apical form /in/ is the norm, and there is only one sign of the adult variable pattern. In one progressive, Andy quotes an offensive older child as saying, "He's been bugging me," with a velar form, the least likely place for the velar to appear in the adult system. This fits in with the previous indications that constraints on (ING) are acquired more slowly than those on (TD).

Table 3 reports the recorded utterances of Andy's 2-year-old brother,

TABLE 3. *Utterances of Chris Carter, 2, King of Prussia*

kr → kr	[maɪ neɪm krɪθ]	'My name Chris'
sp → p	[pik]	'Speak'
ts → s	[si dæs na hat-, naʔ hat]	'See, that's not hot — not hot.'
ts → s	[dæs na hat]	'That's not hot.'
ts → 0	[wa jə neːm]	'What's your name?'
ts → s	[ɪs ə mami]	'It's a mommy.'
ts → s	[ɪs ə dali]	'It's a dolly.'
ts → 0	[wa yə nem]	'What's your name?'
ts → d	[wad yər nem]	'What's your name?

Chris. Almost every item involves consonant clusters in the underlying form of the adult equivalents. They are all simplified except initial /kr-/, so there is little room for abstract constraints on the deletion of /-t, d/, and we must look for the beginnings of the (TD) variable at a later stage.

The active period for the acquisition of these variables therefore seems to lie between 4 and 9, at least in this community. If we were to assume that this aspect of language learning were controlled by innate, universal principles, then we would expect to find the following order of acquisition:

1. articulatory constraints governed by the sonority hierarchy,
2. grammatical constraints,
3. stylistic and social constraints.

These data from King of Prussia display a different ordering. Children first show the social and stylistic constraints on variation, then the language-specific grammatical and articulatory constraints. Many of the regular effects of general articulatory constraints actually follow the two sets listed earlier. Much later in life, the results of the continuing analysis of derivational morphology are in evidence, including the recognition of the morpheme boundary in *kept, told, lost,* and *bent.*

The results of this limited study of the acquisition of variable constraints agree with the general direction of other accountable studies of variation. There is little evidence to support the notion of a language-learning faculty isolated from social and historical developments. On the contrary, children appear to focus sharply on the pattern of social variation, and so reproduce the historically preserved variable patterns. The knowledge of history so transmitted is not, of course, conscious knowledge, but we would not expect deep-seated linguistic knowledge to be conscious. The tendency to focus on the language- and dialect-specific features of language variation gives us some clue to the problem of how such historical continuity is maintained over long periods of time.

NOTES

1. Skeat (1888) gives a fairly complete account of this development and draws the connection to modern *aks*.
2. This finding first appeared in the work of students in a class on the Study of the Speech Community, at the University of Pennsylvania.
3. A /d/ in this position is often neutralized before a following affricate, but in this articulation, both consonants are pronounced separately.

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