



The Phonology of an English-Speaking Child

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AMERICAN SPEECH



THE PHONOLOGY OF AN ENGLISH-SPEAKING CHILD

THERE exists among grammarians of the present day an ever increasing interest in the gradual development of child speech. No final conclusions can be reached until there is material from many lands which will enable us to eliminate all individual characteristics, and to discover the fundamental similarities in the psychology of first speech. There have already appeared a number of articles from foreign observers, but to the best of my knowledge no attempt has been made to study the English-speaking child from a linguistic point of view.¹ The French grammarian

Marcel Cohen has expressed the challenge most admirably, to those students of language who chance to have small children. He says,²

This makes it desirable, despite difficulties, that many observations of children be made in all languages, and it ought to encourage linguists and amateur linguists to observe children—in particular their own—even when they cannot do so completely.

It was my intention at the outset to make a thorough and complete observation of the speech of my little daughter Mollie;³ unfortunately, I was forced to

Belot, M. Cohen, H. Piéron, H. Wallen), *Journal de Psychologie*, 15 juillet 1923.

Oscar Bloch, *La phrase dans le langage de l'enfant*, *Journal de Psychologie*, 15 janvier—15 mars 1924.

J. Vendryès, *Le langage*, Paris, 1921.

² Cohen, *III*.

³ Mary Cleland (commonly called Mollie), was born September 2, 1923.

Her mother, born in Scotland but receiving her secondary education in Canada, has the general educated English speech with slight British intonation. Her father, the present writer, received his early education in the Mid-Atlantic States. His speech is general English, without dialect peculiarities in pronunciation; intonation, American.

Mollie first began to talk in Columbia, Missouri, but on June 3, 1925, she was taken back to London, Canada, where she remained till the middle of

¹ Oscar Bloch, *Notes sur le langage d'un enfant*, MSL de Paris, 18.37.

Marcel Cohen, *Sur les langages successifs de l'enfant*, Mél. Vendryès, Paris, 1925, 109.

Cited by Cohen are:

Clara u. William Stern, *Die Kindersprache: Eine psychologische u. sprachtheoretische Untersuchung*, 1st ed. 1907; 2nd ed. 1920, Leipzig.

Maurice Grammont, *Observations sur le langage des enfants*, Mél. Meillet, Paris, 1902.

Milivoie Pavlovitch, *Le langage enfantin. Acquisition du serbe et du français par un enfant serbe*, Paris, 1920.

Oscar Bloch, *Les premiers stades du langage de l'enfant*, *Journal de psychologie*, 15 oct.—15 nov. 1921.

Oscar Bloch, *Langage d'action dans les premiers stades du langage de l'enfant*, (Discussion by J. Bloch, G.

be absent for a time at the most interesting period. My results, therefore, may seem fragmentary, but I can at least take shelter in the conclusion of Mr. Cohen's remark. My study was limited to the beginnings of Mollie's articulate speech in direct imitation of her parents or others. Mollie's pronunciation is indicated, in the following, phonetically. The phonetic signs used are as follows (they are distinguished from ordinary signs by being put in square brackets):

- [æ] a as in *at*
- [ɑ] a as in *car*
- [ɔ] a as in *Cuba*
- [i] i as in *machine*
- [ɪ] i as in *bit*
- [e] a as in *mate*
- [ɛ] e as in *met*
- [o] o as in *note*
- [ɔ] o as in *got*
- [ā] a as in *all*
- [œ] like French *eu*
- [u] u as in *rule*
- [ʊ] u as in *put*
- [ʌ] u as in *cut*
- [ɪ] n as in *ink*
- [ŋ] like French *gn*
- [ð] *th* as in *then*
- [θ] *th* as in *thin*
- [ʒ] s as in *vision*
- [ʃ] *sh* as in *sheep*
- [j] y as in *yet*
- [r] r as in *red*
- [s] s as in *sit*
- [g] g as in *get*
- [.] half-long
- [:] long.

[f, v, w, h, k, l, m, n, t, d, z] as commonly pronounced in English.

The first seemingly intelligible word was [mæmæ], uttered on Easter day, April 20, 1924. We soon realized that this was not used for anything in particular, that it was merely an accidental though convenient sound; it could not

definitely be identified with her mother till the following September. By July 1st, 1924 Mollie had learned [kɪtti], 'kitty,' and on August 2nd she first said [pɹɛti], 'pretty', to designate a red rubber devil. These first words, as I shall repeat later, were mere *tours de force*. The child's tongue had not become accustomed to any set series of sounds, but after repeated efforts on the part of her mother the baby had succeeded in making these excellent imitations which were later to be lost and replaced by something vastly inferior—observed upon her own initiative. Under these same forced conditions [bɔɛ] 'bird' was formed for the first time in September, 1924.

The first word which showed initiative on the part of the child was [dæ] first heard in October. This was said when some object was desired. It was certainly imitated from the *that*, in answer to *Do you want that?*

From December onward articulate words began to multiply. It was at this time, when a year and three months old, that Mollie learned [dɔɛ] 'dog,' [kau] 'cow', and [kuki] 'cookie.' Her first phrase was heard on January 11th, 1925, when she suddenly exclaimed [æ wu dæ] ('I want that') in the place of [dæ]. The latter now gradually disappeared from her vocabulary.

A complete list of words at eighteen months, March 2, 1925, was as follows:

- [mæmæ]
- [dædæ]
- [dɔ] 'dog,' (*replacing* [dɔɛ])
- ⁴[tɪti] 'kitty'
- [bɪbi] 'bib'
- ⁵[bɔ] 'bird'
- [kau] 'cow'
- [bebe] 'baby' (*used for the figure of a baby on a calendar and then for any picture on the wall*)
- [pu] 'spoon'

September. Since then she has been in Chapel Hill, North Carolina.

⁴ Note this had replaced [kɪtti].

⁵ No longer [bɔɛ].

- [pu] 'pudding'
 [bʌ] 'bread and butter' (*obviously an attempt to say "butter"*)
 [kækæ] 'cracker'
 [nɪjən]jæ, nænæ] 'dinner' (*for any food*)
 [ke.k:] 'cake'
 [bæbæ] 'apple'
 [d.ʒu] 'orange juice' or simply 'orange'
 [wɔ, wəwə] 'water'
 [be, be.t:] 'bed'
 [nəu] 'down'
 [bæ] 'bath'
 [ko] 'coat'
 [æ, æ.t:] 'hat'
 [dɔ] 'doll'
 [si, ti] 'see'
 [wʌ] 'want'
 [no] 'no'
 [gu.d:, gu] 'good'
 [bæ.d:] 'bad'
 [t.ʃu] 'shoe'
 [tɔ.k:] 'stocking'
 [kʌi] 'cry'
 [we] 'way'
 [wɔki] 'walk'
 [tætæ] 'ta-ta' (good-bye)
 [ko] 'come'
 [pi.k:] 'peek'
 [bɔ.k:] 'box,' thence 'bottle'
 [bu.k:, buki] 'book'
 [dæ] 'that'
 [dɔ.k:] 'duck'
 [tɔ.k:] 'Tuck,' (*a boy next door*)
 [dɪ.k:] 'Dick' (the same)
 [ku.k:] 'bacon'⁶
 [deə] 'there'
 [kœi] 'squirrel'
 [tɪ.k:tɪ.k:] 'tick-tick' (*for clock*)

Phrases

- [dædæ go we]
 [dædæ ko]
 [dædæ kʌi]
 [no wə dædæ]
 [gu nɪjən]jæ]
 [gu.d: pu]
 [bebe kʌi]
 [ou, si dæ dɔ] 'Oh, see that dog' (*or anything else in her vocabulary*)

This is an accurate and almost complete list. The phonological conclusions to be

⁶ Her mother would say when preparing bacon, "Let it *cook* a little longer." Mollie caught only the work *cook*.

drawn therefrom are certainly interesting.⁷ At eighteen months,

1. There were no intervocalic consonants. The few two-syllable words which did exist were treated as *two words*—with a distinct though slight break between the two syllables. Each of these syllables received an *equal* stress; e.g., [tɪ-ti], [bɛ-bɛ].

2. Final *k* was definitely used, though a vowel sound was felt to be necessary after it. As a consequence the explosion of the *k* was either prolonged (almost equal to a *schwa*), or began a second syllable *ki*; e.g., [bu.k:] or [buki]. This last must account, partially at least, for the tendency on the part of an older child to use diminutives in [-i], spelled *-ie*. The parents, unconsciously at first, assume the habit of repeating the child's *bookie*, *doggie*, etc., when addressing it, though if questioned later they would confess a *conscious* use of the diminutive. Such was the result of my own observation and introspection. I have often wondered whether the origin of many diminutive suffixes, as well as childish reduplications, can not be traced to the inability of the young child to pronounce certain pure final consonants (or consonants in some other difficult position, as the nature of the language might offer; e.g., *fillie*, *do-do*, etc.). These imperfections caught and repeated by the adult, usually a fond parent, spread.

Final *g* did not exist as yet.

3. Final *t* and final *d* were in the vacillating stage, now present, now not there; e.g., [gu, gu.d:] [be,be.t:].

4. English final *r* occurred once as [ə].

⁷ It will be noted that nearly all these conclusions refer to the consonants. The vowels offered very little variety. They began to be more exact in December, 1925. (These notes are being revised for the press in August, 1926, nearly a year after the writing of the paper.)

5. No other final consonants were present.

6. Initial *k* could be replaced by a *t*; e.g., [titi].

7. In the consonant combination *d-n* the *d* was assimilated to the *n*, as in [nænæ] 'dinner' and both could be palatalized [njænjæ]. Before the *a* only? The [nau] 'down' is particularly interesting. The initial *d* was unconsciously assimilated to the *n*, and yet there was an inability to utter the final *n*.

8. Of syllabic repetitions I have noted only two which did not correspond more or less closely to the original: [wəwə] 'water' (though not so common as [wəɔ], and [bæbæ] 'apple'. In this last we should expect [æbə].

9. Note the tendency, normal in the English language, to raise a final [a] to [ə].

10. The liquids and *b* do not exist. The final pronunciation of English *r* as [ə] can not be termed a liquid.

But a few weeks after this list was prepared, on March 26th, final *g* was heard for the first time. Mollie pronounced [eg.ki] for *egg*. Note that the *g* was immediately unvoiced to a *k*. Four days after this (March 30th) *soap* was reproduced as [to.k:], and on March 31st *Henry* was pronounced as [ɛ.wi] and *Arthur* as [ɑ.wu].

Additional conclusions: By the end of March, when the child was nearly nineteen months old,

1. [k:] was used for final *p*,
2. intervocalic *r* was [w],
3. final *g*, though heard once, was not wholly distinct from *k*.

From now on we shall continue to list the new words in tabular form, month for month, with the conclusions to be drawn therefrom.

In April 1925, at the age of twenty

months, the following words were first recorded:

[ti.k:] 'sleep'

[ph.æ, p.æ, bæ] 'fire,' 'flowers' and 'fall'

⁸[mʌ.k:, mɪ.k:] 'milk'

[koko] 'bag of coal,' a game consisting in carrying her downstairs on one's back, calling "bag of coal." The extra length in "bag of coal" as distinguished from the single word "coal" was compensated for by repetition.

[pi] (*slightly nasalized*) 'pin'

[ph.u.t:] 'foot'

[mæ.d.zi, mæ.tti, mæ.tsi, mæ.t.ʃi] 'Marjorie.' The last combination soon became the commonest of all.

A new phrase

[ə wɑ gou wɑki] 'I want to go walk.'

Conclusions

1. Most important.—Initial *f* has appeared as an aspirate *p*, though the aspirate was occasionally lost.

2. The sound [dʒ] was represented by [t.ʃ:].

May, 1925 (at twenty-one months).

No words were recorded though several new phrases occurred:

[dædæ gou ən wi.d ə buki], 'Daddy, go and read your book.'

[gou mæmæ (or dædæ)] 'I go to mamma (or to daddy).'

Conclusion

1. An initial *r* was heard as *w*, in [wi.d].

On June 3rd Mollie went to visit her grandparents in London, Ontario. There she had many more people around her, who delighted in making her talk. Unfortunately I was forced to be absent for a good part of June and July, with only

⁸ [mʌ.k:], not so frequent, would show a labilization such as actually occurs in adult speech in *milk*, *children*, etc., where the front vowel is affected by the hard *l*.

occasional opportunities for personal observations. Certain speech developments were recorded by her mother, however, and referred to me by letter.

[be ə bʌ] 'bread and butter,' completely replaced [bʌ] around June 15th

[tu ɔ:t] 'too hot' (June 22nd)

[ɑ wʌv: mæmæ] 'I love mamma' (June 15th)

Note that initial *l* is a *w* here.

In July I was able to note important progress. Her vocabulary was growing so extensive, under the stimulation of her more active environment, that it was no longer possible to make complete lists. Below is a representative table of new words and phrases.

[pɪʃ.] 'fish'
 [pɛn.tə] 'pencil'
 [di] 'deer'
 [te] 'table'
 [te kʌθ] 'table cloth'
 [pɒn.ti] 'pony'
 [hʌn.ti] 'honey'
 [tʌn.ti] 'tummy' (for 'stomach')⁹
 [dɒddi] 'dolly' (noted July 20th)
 [d.ʒæz, nʒæz] 'pajamas'
 [ti.i] 'kitty'
 [ɛə] 'where'
 [kækkæ] 'thank you' (not replaced till September 24th)
¹⁰[tʌnni] 'tummy'
 [pɒnni] 'pony' (July 31st)
 [kʌn.] 'come'
 [ɛə] 'letter'
 [pʊ.ʊ] 'pull'
 [beə] 'bear'
 [sʌn.pau] 'sand pile'
 [wæt.] 'hat'
 [wæŋ.ki] 'hanky' (for 'handkerchief')
 [wæn.] 'hand'
 [maɪ hɒn.] 'Mollie Holmes'

Typical phrases

[dæ.di kʌm ə nʒɛnjæ] 'Daddy will come to dinner.'
 [bʌi, d.ʒu wʌn mɑ dai] 'Boy, do you want more jelly?'

⁹ Whenever a child word such as tick-tick, tummy, etc., was used by the grown-ups whom Mollie copied, it has been indicated. Otherwise baby talk was not used with her.

¹⁰ By analogy? She had no other words in [-ʌmmi].

[tæntə put mə hæŋ. ʌn] 'Put something on my hand.'

[aiz ə mæ sɔ:t] 'Soap in my eyes.'

[dæddi bɪŋ piks ə maɪ] 'Daddy brought Felix (a toy cat) to Mollie.'

[ti ma wi wæŋ.ki ə mæ pʌkə] 'See my wee hanky in my pocket.'

Conclusions

1. Initial *b* was being sought through *w*, occasionally resulting in a correct *b*.

2. A *nn* (or [n:]) which exists in English speech in many cases where a single *n* is spelled, was for a short time dissimilated to an [n.t]—in order to bring out the prolonged or double nature of the sound. This phase was soon replaced by normal [n:]; in fact, within the same month.

3. Final *n* is definitely present. There may have been a trace of it in June, in view of [pi] 'pin' which showed a slight nasalization at a still earlier date. Final *m* was rendered as *n*, except in the interior of a phrase when followed by a vowel, which rendered it intervocalic.

4. Through final consonants still had a light prolongation of explosion, the second syllable of two syllable words was receiving *less stress* and there was now very little pause between the two elements. From now on two syllable words may be said to exist as such. Under these circumstances, since a *t*, beginning a second syllable, was no longer initial in value—but intervocalic—it disappeared; e.g., [tʃi], not [tɪ tʃi], or 'kitty'; likewise [ɛə] for letter.

5. Initial *l* is zero; intervocalic *l* is zero or *d*; final *l* is [ʊ].

In August, after one more absence, I had the opportunity for leisurely observation, and I found her speech already at a high point of development. I shall continue to give certain of the typical words and phrases. Sentences were now constructed at will (at twenty-three

months), independent of any imitation. Below is a list for August:

[tɪs.] 'kiss'
 [gɒl.] 'golf'
 [nɑ.ɪs] 'knife'
 [kæ.ʌts.] 'carrots'
 [pɑ.ɪd.ʒ] 'porridge'
 [sɪk] 'sleep'
 [flaʊ.əz] 'flowers' (*had replaced p.ɑ*)
 [mɒni] 'Mollie'
 [fɪŋ.bæ(ŋ)k] 'Springbank'
 [kwɑ.n.tri] 'country'
 [bɪlɪ] 'Billy' (the goat)
 [sʌni] 'Sunday'
 [bʌk.] 'fox'
 [nɑʊŋ.ki] 'donkey'
 [ʃɪk.] 'sheep'
 [et.] 'open'
 [fɔʊ] 'fall'
 [daʊn.] 'down'
 [bʌf.əz] 'buffaloes'
 [dɔɪ] 'drawer'
 [bʌt.əz] 'buttons'
 [d.ʒʌnt.] 'jump'
 [ʌbi] 'automobile'
 [bɪd., bɪbbɪ] 'bib'
 [mɑd.ʒɪ] 'Marjorie'
 [t.ʃʌkə] 'chocolate'
 [hæt.] 'hat'
 [hæŋ.ki] 'hanky'

occasionally

[wæt.]
 [wæŋ.ki]

Phrases

[aɪ nɒt wi t.ʃʌnt.] 'I am not a wee chump'
 [pɒs. ɔ̃ ə] 'Post the letter'
 [dɔɪn əweɪ] 'going away'

Conclusions

1. A word of more than¹ two syllables seems to be consistently reduced to two. Presumably that was Mollie's syllable span; e.g., ʌbi, bʌf.əz, t.ʃʌkə.

2. Intervocalic *l* equals *d*, zero, or *n*.
 Final *l* is [u].

Initial *l* is still zero.

3. Final *p* is either *t* or *k*.

Final *b* is *d*.

Final *f* is [θ], or *s*.

4. In the use of final *s* (usually pronounced *z*) Mollie was confused, not understanding the plural.

5. Initial *g* and *d* are occasionally alternating. This certainly must have been present for some time, though I had made no note of it.

In September (at twenty-four months), there were such words as:

[dɔg] 'dog'
 [pɪg.k.] 'pig'
 [kæd:] 'cab' (carefully imitated after her father)
 [fun.] 'spoon' (definitely replacing [pu])
 [ʃus.] 'scissors'; also 'shoes' (present for some time previously)
 [fɔk kɔd] 'Spark Plug' (*a toy horse*)
 [ʌt deə] 'up there'
 [get. ʌp.] 'get up' (the *p* distinctly heard on September 16th)
 [bɪd. tɪs.] 'big kiss'
 [dɔgiwɔg] 'Gollywog'
 [gɔɪ] 'girl'
 [nɑ.ɪə.] 'knife'
 [kɑɔɪ] 'coffee'
 [bet.] 'belt'
 [pɜrs.] 'purse' (*r* distinctly heard, for first time in this position, on September 18th)
 [bʌkən(t)] 'button'
 [pen.sən(t), pən.tə, pən.sə] 'pencil'
 [bweɪsən(t)] 'bracelet'
 [t.ʃʌkən] 'chocolate'

Phrases

[dɒn. pʊt. æt sɪŋ ən jə mʌs.] 'Don't put that thing in your mouth'
 [eə mæ penni gou] 'Where did my penny go?'
 [d.ʒu kʌm pʊ.t mɑ ʃʌs ʌn.] 'You come put my shoes on'
 [ɑ wʌn ə kwɪn. dweɪs.] 'I want a clean dress'
 [ɑ wʌntə mɔə pennɪs.] 'I want more pennies'
 [æs nɔ fɔd, æs ʌbi] 'That's no Ford, that's an automobile (said with regard to a mechanical automobile which we insisted was a Ford)
 [ɑ wʌnə tau mʌmɑ] 'I want to tell mamma'

Conclusions

1. [θ] is still *d*, *s*, zero, or correctly [θ].

2. Two types of sounds hitherto absent are beginning to appear:

(a) final *p*, *b*, *m*.

(b) a correct untrilled *r* is beginning to be heard, beside zero and *w*.

3. *f* final or medial, is [θ] or *s*.

4. final *l* was [ʌ], changing a preceding [ɛ] to [ɑ].¹¹

For the two months, June and July, my observations were, of course, scanty. Many sounds must have appeared first at that time which are grouped under August and September. Though this may render my study imperfect I trust there will be something of interest in the preceding pages. Before closing it would be well to make a survey of Mollie's speech as it stood at the time of writing of this paper (October 5th, 1925; age twenty-five months). We can accurately state that she possessed broadly, minus the finer shades, all the English consonants save:

(a) *l*

(b) medial and final *f*

(c) *s* impure, (*sp*, *st*, *sc*)

This does not mean that she always pronounced a word correctly which did not involve these sounds. She still continued to preserve conservatively such early expressions as

[ɛt.] 'open'

[nʒænʒæ] 'dinner' (oatmeal porridge in particular), etc.

¹¹ The action of a vocalized hard *l* upon a preceding [ɛ] became most noticeable in November and December 1925. *Smell* was pronounced [smɔu], and *self* [saus]. The latter sounded particularly humorous in the expression [ai hart moi saus] 'I hurt myself' where it was in a much higher key than the other correctly pronounced words. This action of the vocalized *l* impressed me particularly in view of the *a* which developed as a transition vowel in French *beau* from *bel*, etc.

These had not yet been replaced by new observations. Her syllable span continued to be two, which meant the reduction of all longer polysyllables. Her most frequent error, however, was vacillation between two consonants. One was likely to be uttered at a given time, the other at another. The commonest pairs were:

(a) initial *k* and *t* (*k* intended)

(b) initial *s* and *t* (*t* intended)

(c) [θ] *s*, *d*, and zero ([θ] usually intended)

(d) final *p*, *t*, *m*, and *b*, *d*, *n* (the first series intended)

(e) intervocalic *t* and its omission

(f) *r* and *w* (with *r* intended; the latter was still much more frequent)

(g) *d* and *g* in either initial or final position (either intended)

(h) [ʃ] and *s* ([ʃ] intended); e.g., [pus, puʃ] 'push'; [fis, fiʃ] 'fish'

(i) initial *f* and *p* (*f* intended).

For *s* impure Mollie employed the following substitutes,

1. Initial

sp became *f*

st became *t*

sc became *c*

e.g., [fun.] 'spoon', [twit.] 'street', [kwæt.] 'scratch'.

2. Final. The second element was omitted; e.g., [pos] 'post', etc.

I did not observe many consonant combinations. As a rule a child will avoid altogether combinations which are difficult to pronounce.

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