Phonology

In: Pačesová, Jaroslava. *The development of vocabulary in the child.* Vyd. 1. Brno: Universita J.E. Purkyně, 1968, pp. 74-113

PHONOLOGY

VOWELS

The vowels recorded in the corpus of the first one hundred words are arranged in the following table:

	Front	Central	Back
High	/*i*/ [*i*] [*i.*] [*i:*] [*i::*]		/*u*/ [*u*] [*u.*] [*u:*] [*u::*]
Mid	/*e*/ [*e*] [*ę*] [*ę:*] [*ę::*] [*ɛ*] [*ɛ:*] [*oe*] [*Ø:*]		/*o*/ [*o*] [*o*] [*ǫ*] [*o:*] [*ǫ:*] [*ǫ::*] [*ǫ*] [*ǫ:*]
Low		/*a*/ [*a*] [*a.*] [*a:*] [*a::*]	

Figure 71

As in the first period, here too allophones, otherwise foreign to Standard Czech, appear in the child's vocalic system. Besides the proper neutral vowels there are open and close allophones and the feature of rounding is employed with the front vowels. The length of the vowels is also unstable as yet. Three long variants stand as a counterpart of the corresponding short member. All these variants do enrich the vocalic system of the child as far as the phonetic realization is concerned. Functionally, on the other hand, the child's vocalic system is—compared to that of Standard Czech—poorer, as none of the mentioned additional sound differences has a phonemic value.

There follows the analysis of vocalic phonemes as they were realized and distributed in the corpus of the first one hundred words.

The Vowel /*a*/

Phonetic Realization

The phonetic realization of this low central vocalic phoneme was already stable in the previous period and remains so in this second one. No deviations from the Standard norm were observed either in the production of this vowel or in the auditory

impression, as far as short [*a*] is concerned. The feature of length, however, still remains but imperfectly learned. In spite of the fact that the quality of the long vowel closely corresponds to that of Standard Czech, its quantity still varies between semi-long, long and extra-long while the phonemic status is not attributed to any of these sound differences.

Distribution

The vowel /*a*/ remains first in the frequency scale of phonemes in this period. Its 286 occurrences in the realizations of the first one hundred words represent 33.9% of the vocalic phonemes and 16.2% of all phonemes counted.

As for the positional occurrence, /*a*/ is not limited and is distributed word-medially, word-finally and word-initially, in this order of frequency (see Figure 72).

In view of the fact that most Czech words begin with a consonant, the 11.2% of /*a*/ word-initially perhaps requires an explanation. The dislike of Czech for employing vowels initially has been brought up already by V. Mathesius[84] especially as far as the emotional and onomatopoeic words are concerned. In detail this phenomenon was dealt with by J. Vachek[85] who aimed at solving two questions in particular: which of the vowel phonemes are distributed word-initially and to what degree. From his findings these conclusions may be drawn: words beginning in /*o*/, /*u*/, /*u:*/ show a conspicuous preponderance compared to those beginning in /*a*/, /*e*/, /*i*/. The ratio between these two groups is expressed in figures 92.31 : 31.69. When excluding the loan-words, the preponderance of the former group is even higher, cf. 98.56:1.44. Viewed from this angle, the relatively high number of /*a*/ in the initial position in the realizations of the first one hundred words is rather surprising. A list of instances beginning in /*a*/, however, offers an explanation: most of the words are distortions, where the medial vowel has become initial because the proper initial consonant was dropped, cf. [*ašę·*] *Vašek*, [*ašiːček*] *Vašíček*, [*ama*] *sama*, [*aba*] *chleba*, [*amba*] *hamba* [*aputu*] *lopatku*, [*aːba*] *žába*, [*afišto*] *kafíčko*. The following examples, on the other hand, illustrate the proper distribution of /*a*/ in the initial position: [*auto auto*, [*asta*] *Asta*, [*ahoj*] *ahoj!*, [*ano*] *ano*. With the exception of the particle *ano* all these lexical items are loan-words[86] and their phonemic structure is therefore not identical with that of synchronically indigenous words.

Positional Distribution

The Vowel /*a*/

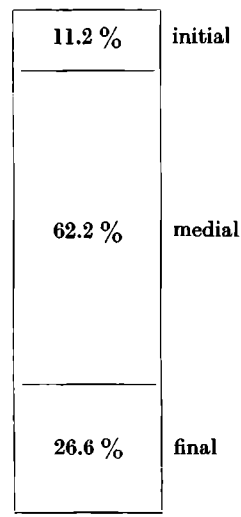

Figure 72

In the medial and final position /*a*/ is distributed properly, cf. [*baf*] *baf!*, [*bumbaːc*] *bumbác!*, [*bexat*] *běhat*, [*babuːlki*] *brambůrky*, [*masʼo*] *maso;* [*haču*ː] *hačá*, [*diːla*] *díra*, [*teliška*] *tetička*.

Due to the lasting instability of the dipthongs, the phoneme /*a*/ acts as a substitution for [*au*]. The diphthongal pronunciation, however, appears in the onomatopoeic expression [*mňau*] *mňau!*

[84] Cf. V. Mathesius, *La structure phonologique*, p. 78.
[85] Cf. J. Vachek, *Fonologie lexika*, p. 399.
[86] On the question of loan-words see V. Mathesius, *Cizí slova*, pp. 231—239.

The Vowel /e/

Phonetic Realization

As in the first period, so too in this second one the phonetic realization of /e/ has not been mastered well. The following are various realizations of this vowel as they were recorded in the corpus of one hundred words:

short open	[ę]	e.g.	[*ašę·*] *Vašek*, [*ďęďę*] *děda*
short neutral	[e]	e.g.	[*ne*] *ne*, [*eba*] *chleba*, [*mema:*] *nemá*
short close	[ę]	e.g.	[*pilęlęk*] *píseček*, [*łępiška*] *čepiška*
long open	[ę:]	e.g.	[*ę:lo*] *aero*, [*bę:bę:*] *bébé*
long close	[ę:]	e.g.	[*ę:lo*] *aero*, [*nę:ňi*] *není*
short rounded	[œ]	e.g.	[*tœdœ*] *tudú!*
long rounded	[Ø:]	e.g.	[*elØ:*] *ještě*, [*jØ:žØ:*] ježek

Compared to the previous developmental stage the number of the allophones of /e/ is still higher. While the neutral short [e], open short [ę], open long [ę:] and rounded long [Ø:] appeared and were dealt with in the analysis of the first fifty words, short close [ę] and short rounded [œ] come newly into the phonemic system. The short close [ę] occurred mostly in the neighbourhood of the palatal [ł], cf. [*pilęlęk*], [*łępiška*]. The close lip-rounding in this vowel was so strong that in auditory impression only a very slight difference from /i/ was noticeable. We have mentioned before that in some cases the phoneme /e/ was replaced by /i/. The examples [*bibi:*] *bebé* and [*ďiłi*] *děti* were offered for illustration. Of these words [*ďiłi*], enriched by two analogous diminutives [*ďiłiško*] and [*ďiłišto*], still exists in the child's idiolect. As an explanation for the change *e* > *i* we suggested the operation of distant assimilation supported by two factors: the so far unstable phonetic realization of /e/ and the tendency to equalize all vowels occurring in one expression. A most probable explanation for the neutral [e] > close [ę] is perhaps the lasting unstable phonetic realization of /e/. The same holds good as far as the rounded allophones [œ] and [Ø:] are concerned. Hála's suggestion that the rounding of /e/ is to be explained on the basis of emphasis when preceded by the consonants /š/, /č/ and /ž/[87] is not sufficient here, as the labialization of /e/ in the child's speech took place in other consonantal situations as well, cf. [*elØ:*] *ještě*, [*tœdœ*] *tudú*, [*jØ:žØ:*] ježek.

Besides the instability of quality, the quantity of /e/ also remains an unacquired feature both phonetically and functionally. The characteristics of /e:/ as a front mid neutral and somewhat closer vowel compared to the short /e/ and roughly twice as long in duration, has not been attained at this stage of speech development.

Distribution

As in the first period, so too in the second one the phoneme /e/ comes fourth in the frequency scale of the vowels which occurred in the realizations of the first one hundred words. Its 124 occurrences in the corpus represent 14.7% of the vocalic phonemes and 7.0% of all phonemes counted.

As regards the positional occurrence, /e/ is not limited and appears word-initially, word-medially and word-finally. In numbers of occurrences, the medial position is the leading one, the final follows while the initial comes last. Compared to the frequency counts of the first period, the figure representing word-medial position is consider-

[87] Cf. B. Hála, *Uvedení*, p. 163.

ably higher. The explanation is easy: most of the expressions that enter newly into the child's word-stock are in diminutive form, having thus /e/ in the suffix, cf. [*ebi:ček*] *chlebíček*, [*ašek*] *Vašek*, [*aši:ček*] *Vašíček*, [*medi:dek*] *medvídek*, [*ješešek*] *ježeček*, [*nołiłek*] *nočníček*. Besides, the final consonants are not dropped as often as before and so many a vowel which was final in the previous stage, is now the proper medial one.

The 36% of the final position is due to the frequent occurrence of the particle [*ne*], of the verbal forms as [*mema:me*] *nemáme*, [*ułika:me*] *utíkáme*, [*je*] *je* in the constructions [*totoje*] *co to je*, [*dotoje*] *kdo to je*, [*detoje*] *kde to je*, and the various forms of the interjection *mémé*. There are, nevertheless, even in this period some instances where, due to the occasional dropping of the final consonants, the proper medial vowel comes to be the final one, cf. [*kiki:če*] *kyblíček*, [*medi:de*] *medvídek*, [*beja:ne*] *beránek*.

A few comments should be made in regard to those examples where /e/ occurs in the initial position. Of all occurrences only the few in the various realizations of the loan-word *aero* represent the proper initial vowel. The forms [*ełe*], [*ełØ:*], [*ete:*] have their origin in the first developmental stage where the dropping of the initial consonant /j/ was attributed to the imitation of the colloquial form [*ešte*] instead of the standard form [*ješte*]. Other initial consonants and consonantal clusters, however, were dropped as well, though the boy had no corresponding model for imitation, cf. [*eba*] *chleba*, [*ebi:šek*] *chlebíček*, suggesting thus that most of the initial /e/ realizations are to be explained on the ground of an as yet incomplete acquisition of language, similar to that in the case of initial /a/. The proportionate numbers of occurrences of /e/ are given in Figure 73.

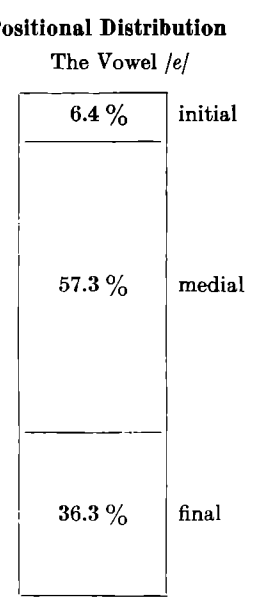

Figure 73

The Vowel /i/

Phonetic Realization

The realization of this front high and neutral vocalic phoneme is stable in the child's idiolect of this period—similarly as in the previous one—and no deviations either articulatory or acoustical in comparison with the Standard norm were noticed. Also the long counterpart of /i/ becomes stabilized and has, in most cases, achieved the characteristics of a front high neutral vowel. Progress is evident even as far as the length of this vowel phoneme is concerned. The extra-long allophones occur only in the interjection *kykyryký*. Most of the long [*i:*] instances are used in their proper places, cf. [*koki:ček*] *knoflíček*, [*pi:jali*] *zpívali*, and their duration more or less corresponds to Standard Czech usage. The fluctuation between [*i*] and [*i:*] was, however, still recorded, cf. [*piłęłęk*]—[*pi:łęłęk*]—[*medide·*]—[*medi:dek*], [*dila*]—[*di:la*]. For this phenomenon two explanations are at hand: either the feature of length has not been mastered as yet, or the child starts to imitate the general tendency of Colloquial Czech, namely, the shortening of the high vowels which is common especially in

polysyllables. The tetrasyllable [*ulika:me*], realized always with the shortened [*i*], would support the latter explanation.

In contradistinction to this, however, we have examples where the lengthening of the short [*i*] occurred. In some of such cases, this lengthening had a supplementary function, being employed for the loss of a consonantal phoneme, mostly one whose phonetic realization is still unknown to the child, cf. e.g. [*ji:ka*] *Jirka*[88]; in others, its function was merely emphatic, cf. [*papali:*], [*hajali:*], [*baboli:*], [*hačali:*]. In this connection, a special feature observed in the child at this stage of speech development should be mentioned. In simplifying the consonantal clusters, the neighbouring vowel used to be geminated, cf. [*biiko*] *bříško*, [*bi^{i}š'o*] *břicho*, [*bambu^{u}ki*] *brambůrky*[89].

Distribution

194 observed occurrences of the phoneme /*i*/ in the corpus of one hundred words represent 22.9% of the vocalic phonemes and 11.0% of all phonemes counted. In spite of the fact that the figures—compared to the previous period—are lower, the second place of /*i*/ in the frequency scale of vocalic phonemes is preserved.

Contrary to the first period, however, the phoneme /*i*/ is restricted in distribution and occurs in word-medial and word-final position only. The four word-initial occurrences of the previous stage were liquidated as the boy realized the genuine initial consonant which had been dropped before. Examples taken from the first corpus and their realizations in the second one follow to ilustrate this: [*ika*]—[*ji:ka*], [*iži:*]—[*jiži:*], [*ižiče*], — [*jiži:če*], [*iti*] — [*deti*].

As for the medial position, the number of occurrences here increased and, as with /*e*/, so too with /*i*/, this position becomes the leading one. This is in concordance with the fact that unlike the first developmental stage, where the nursery forms were mostly undeclinable and the CV pattern predominating, in this second stage the endings and derivative suffixes are being more and more often employed, shifting thus the former final vowels into the medial position. A few examples follow for illustration [*haji:*]—[*haja:m*]; [*hači:*]—[*hača:m*]; [*mami*]—[*mamišta*]; [*babi*]—[*babišta*]; [*bibi:*]—[*bibi:šk*o]; [*kiti:*]—[*kitiški*]. Some of the forms which represent the earlier developmental stage are occurring parallel with the new formations, some of them, however, disappeared from the child's vocabulary of this period. The forms [*baji, bali*] where /*i*/ acted as a substitution for /*o*/ have also disappeared. Though numerous imperfect realizations besides the correct [*balo:n*] are in use at this stage of

---

[88] This kind of lengthening is not exceptional in child language as is often shown in the findings of other authors. Of these let us mention at least the following: Ohnesorg, *Fonet. studie I*, p. 45, *Fonet. studie II*, p. 52; J. Janko, *Několik postřehů*, p. 132; A. Grégoire, *L'apprentissage*, p. 172; P. Guillaume, *L'imitation*, p. 41; M. Grammont, *Observations*, p. 71; P. Smoczyński, *Przyswajanie*, p. 184; – Rather interesting is the approach of R. Jakobson (*Kindersprache*, p. 329). In the lengthening of the vowel which is employed by Russian children in place of as yet unmastered /*r*/ he sees the phonologization of the feature of length, which has not a phonemic value otherwise.

[89] Ohnesorg (*Fonet. studie II*, p. 45) has a similar experience. His terminology, is however, different. He speaks of diphthongization where we suggest gemination. Neither of these terms is, in our opinion, the correct one. The term gemination might raise the idea of two identical vowels being pronounced one after the other which is not exactly the case. — We have, however, deliberately avoided the term diphthongization for the following reason: the child in the first stages of his speech development does not realize any diphthongs in his idiolects. The question arises as to why he should constitute new, untypical diphthongs in the period when he monophthongizes the existing ones.

development (cf. [*bao:n*], [*bajo:ni*], [*bano:n*], [*bajo:nek*] */i/* instead of */o/* is employed in none of them.

As for the final position of */i/*, it is proper in most of the cases, cf. [*bejani duc*] *berany duc!*, [*ďi:li*] *díry*, [*bambu.lki*] *brambůrky*, [*pați pați*] *paci paci!*.—Of the exceptional distribution in this position, the instance [*apapani*] in the construction [*bi'ko napapani*] *napapané bříško* is of interest. Two explanations can be offered here: either the boy employs the well-acquired */i/* instead of the as yet unstable */e/* or, which seems more probable in this situation, he starts imitating the Colloquial form [*napapani:*] instead of Standard Czech *napapané*.

Indicated in Figure 74 is the proportion of */i/* in the two positions.

Positional Distribution

The Vowel */i/*

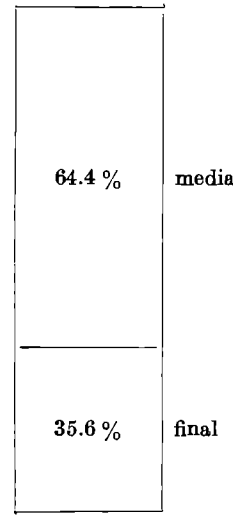

Figure 74

The Vowel */o/*

Phonetic Realization

Like the front mid vowel phoneme */e/*, the back mid vowel phoneme */o/* has not been stabilized as yet as far as the phonetic realization is concerned. The allophones observed in the corpus of the first one hundred words now follow:

short open	[ǫ]	e.g.	[*autǫ*], [*a:łǫ*] *auto*, [*a:łi:tǫ*] *autíčko*
short neutral	[*o*]	e.g.	[*oko*] *okno*, [*oki:k*] *knoflík*, [*hop*] *hop*
short close	[ǫ̇]	e.g.	[*kǫ̇kǫ̇kǫ̇da:k*] *kokokodák!*
long open	[ǫ:]	e.g.	[*anǫ:*] *ano*
long close	[ǫ̇:]	e.g.	[*hǫ̇:pi*] *houpy*, [*nasonǫ̇:*] *na shledanou*
long neutral	[*o:*]	e.g.	[*balo:n*] *balon*, [*bajo:ni*] *balony*
long strongly rounded	[ǫ̣:]	e.g.	[*tǫ̣:to*], [*tǫ̣:tok*] *toto*

Most of these allophones occurred and were dealt with in the first period. Moreover, the correct neutral [*o*], both short and long, newly enters the phonemic inventory. As for the distribution, the neutral vowel appears in new expressions, while in the older ones the child clings to the incorrect open or close realizations of */o/*, similar to those he used in the earliest stage of his speech development[90]. Contrary to the first period the qualitative reduction *o* > *ə* has no occurrence in the realizations of the first one hundred words.

---

[90] The data illustrating perseveration in child language may be found with some other investigators as well, e.g. Gvozdev, Ohnesorg and Kaczmarek. In their observations the primary imperfect pronunciation is preserved in the frequent baby words while the more unusual expressions have the correct pronunciation from the very moment they enter into the child's vocabulary, cf. Gvozdev, *Usvojenie*, p. 32. A few examples illustrating this observation follow: Ohnesorg (*Fonet. studie II*, p. 27) finds the correct pronunciation of the velar stop */k/* in the new or rare expressions, e.g. *fakulta*, *pavouk*, while in the older words the alveolar */t/* still acts as a substitution; similarly */l/* has a stable lateral realization in those expressions which appear newly in the child, while in the older ones, the fluctuation *l/j* still occurs, cf. *Fonet. studie II*, p. 74;. — Kaczmarek (*Kształtowanie*, p. 59) has this example: his daughter learned to reproduce the word *łodka* as [*yutka*] in the first developmental stage and clung to this realization long after all the phonemes were acknowledged by her.

The instability of the feature of length, noticed in the first-fifty-word period, is still shown in many an example in this second period and so is the unstable character of the diphthong [*ou*].

Distribution

The fifth place in the frequency scale of vowels recorded in the previous stage is preserved in this second one. 116 occurrences of /*o*/ in the realizations of the first one hundred words represent 13.7% of the vocalic phonemes and 6.6% of all phonemes counted. Compared to the first-fifty-word period the statistical data for /*o*/ are higher now. This is in close connection with the phonemic structure of the child's vocabulary. While in the nursery forms and interjections the phoneme /*o*/ had minimal occurrence, it has a fair distribution in other words which enter gradually into the child's word-stock, thus making the proportional numbers of vowels more evenly balanced.

Positional Distribution

The Vowel /*o*/

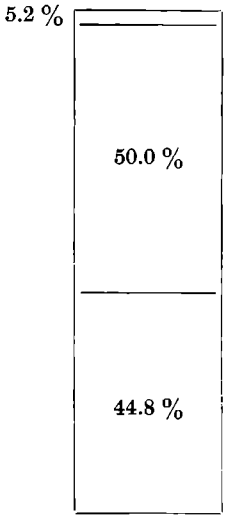

Figure 75

With regard to place of occurrence, /*o*/ is not limited and appears word-medially, word-finally and word-initially, in this order of frequency.

As for the initial position, the sole example [*o:pi*] realized in the previous period is now replaced by the correct form [*houpi*]. Two new items, however, appear where the genuine initial consonant is still dropped, cf. [*opatu*] *lopatku*, [*oki:k*] *knoflík*. The remaining occurrences represent the real vocalic position word-initially, cf. [*oba:ze*] [*oba:de*] *obrázek*, [*oko*], [*okono*] *okno*.

In medial position /*o*/ is distributed correctly in most instances, cf. [*koki:kek*] *knofliček*, [*hop*] *hop*, [*tolešto*] *kolečko*, [*bolili*] *botičky*.

As for final position, /*o*/ appears most frequently in the various forms of the pronouns *kdo*, *co*, *to*, e.g. [*do*], [*to*], [*co*], [*c'o*], [*s'o*], [*č'o*]. Next frequent occurrence of /*o*/ word-finally is in diminutives with the suffix *-čko*, cf. [*tafišto*] *kafíčko*, [*bibi:ško*] *bebíčko*, [*masi:ško*] *masíčko*, [*bi:što*] *bříško*.

The close [*o:*] occurs further as a substitute for [*ou*], both in word-medial and word-final position. In some instances, the real diphthongal realization [*ou*] appears, the two forms existing then as parallels: [*ho:pi*]—[*houpi*] *houpy*, [*nasono:*]—[*nasonou*] *na shledanou*. The proportional occurrences of the three positions are given in Figure 75.

The Vowel /*u*/

Phonetic Realization

As with the front high vowel phoneme /*i*/, so too the back high vowel phoneme /*u*/ is fairly stable in the child's idiolect and its phonetic realization coincides in most cases with that of Standard Czech both in production and in acoustic impression. Though the fixation process is still continuing as far as the long counterpart of /*u*/ is concerned, the child seems to be aware of the different quality and of the correct distribution of the short and long [*u*]. The extra-long variants have disappeared from

his phonemic repertory with the few exceptions observed in interjections (cf. [*bu*::*m- ba*::*c*] *bumbác*, [*kutululu*::] *kutululú*, [*bu*::*bubu*] *búbubu*). More or less exceptional, too is the misuse of short and long counterparts of this back high vowel phoneme. The example [*tu*:*ta*] *tužka* where the lengthening of the genuine short [*u*] has a supplementary function for the loss of the consonant, is one of such exceptions. The long [*u*:], on the other hand, is replaced by a semi-long or geminated variant in the item *brambůrky*, cf. [*bambu.lki*], [*bambu^{u}ki*][91].

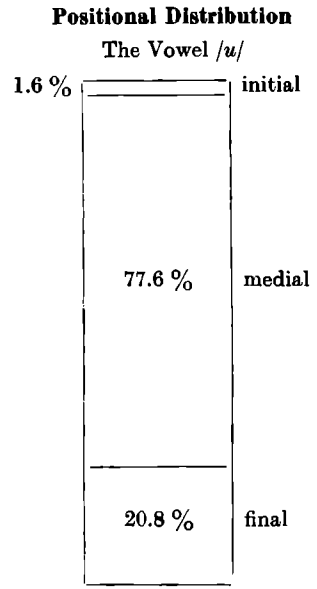

Figure 76

Distribution

125 observed occurrences of the phoneme /*u*/ in the corpus of one hundred words represent 14.8% of the vocalic phonemes and 7.1% of all phonemes counted. These figures, though somewhat lower than in the previous period, rank the vowel /*u*/ as the third most widely distributed one, i.e. it has the same place as it occupied before.

In distinction to the first-fifty-word period, /*u*/ is not limited in the place of occurrence and has been recorded word-initially, word-medially and word-finally. Like other vocalic phonemes, /*u*/ shows striking preponderance in medial position, the second most frequent being the final, while the initial comes last. Indicated in Figure 76 are the proportions of occurrences in the three positions.

The following are some examples of /*u*/: [*ułika*:*m*] *utíkám*, [*huł*i:] *hučí*, [*papu*:] *papú*, [*bumba*:*c*] *bumbác*, [*tutuč*] *kukuč*, [*ňau*:] *mňau*, [*bu*:*bu*:] *búbú*; Besides those cases where /*u*/ is used properly, it has, similarly as before, the substitutive function in place of syllabic [*r*], cf. [*puši*:] *prší*, [*xuxu*] *chr chr!*

Summary

Many conclusions on vowels reached in the previous period hold good for this second developmental stage as well. Thus the vowels /*a*/, /*i*/, /*u*/ are stable while /*e*/, /*o*/ still fluctuate in allophones, untypical of Standard Czech. Alongside the observed open, close and rounded allophones, varying moreover in their length, there are, however, /*e*/, /*o*/ phonemes whose phonetic realization come near to their Standard Czech models, viz. mid, neutral front or back respectively.

The mastering of diphthongs is not yet perfect either. Contrary to the first-fifty-word period, the diphthongs [*ou*] and [*au*] do exist in the child's repertory, their realization, however, is not fixed enough to replace the incorrect monophthongal substitutions [*o*:] and [*a*:] in all instances.

As for the frequency counts, the order remains unchanged compared to the previous stage, viz. /*a*/—/*i*/—/*u*/—/*e*/—/*o*/. The differences in statistics, however, are not so conspicuous as before. There is still a high preponderance of /*a*/ and /*i*/, the remain-

[91] On this change cf. the paragraph on Phonetic realization of /*i*/, where the tendency to shorten the long high vowels in polysyllables in Colloquial Czech was mentioned.

ing three vowel phonemes /u/, /e/, /o/, on the other hand, are more evenly balanced in distribution (see Figure 77).

As for the place of occurrence, the medial position is the most frequent both in separate vowels and in total numbers. Compared to the first-fifty-word period, the percentage for the medial vowels increased (cf. 54.0% : 62.6%) and so did the percentage for initial vowels (cf. 4.4% : 5.7%). The greatest change, however, is noticeable in the final position, the occurrences here being almost 10% less frequent. A plausible explanation for this phenomenon might be seen in the change of the syllable structure; in distinction to the first developmental stage where 92.8% of syllables were of CV pattern while the patterns which would represent the closed syllables were more or less exceptional, we have 19.4% for the closed syllables in this second stage. The increase is due to the fact that the undeclinable nursery forms are gradually replaced by the declined forms, accepting thus endings many of which are consonantal. Furthermore, most of the final consonants which were dropped before are now realized, thus contributing to the shift of the former final vowels to the medial positions. Figure 78 gives the proportional occurrences.

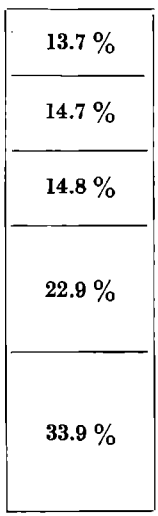

Figure 77

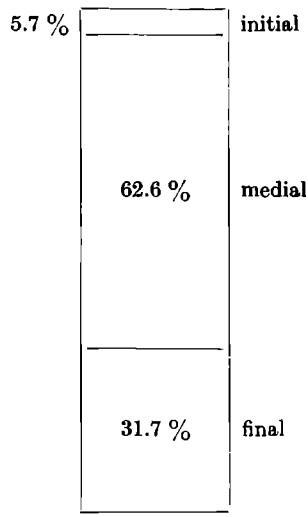

Figure 78

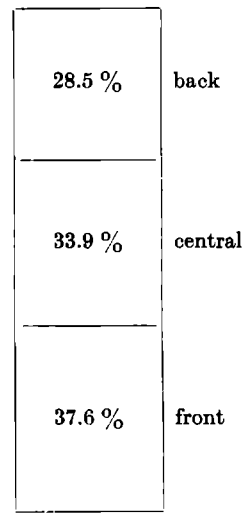

Figure 79

To summarize the role of articulatory features in the child's vowel system, we can say that the contrast wide *versus* narrow has been learned well and so have the contrasts high *versus* low and front *versus* back. Rounding, however, shows a certain instability, being attributed to the front vowels as well. The feature of length is another distinction the child has not yet acquired well. In spite of the fact that he has short and long vowels in his vocabulary, no data exemplifying their contrastive use have been recorded. Figures 79 and 80 indicate the proportions of the existing distinctions.—The additional sound differences mentioned in the first-fifty-word

period, i.e. labialization, open and close, semi-long and extra-long qualities, are still in use in the realization of the first one hundred words, once again not used contrastively.

Figure 81 follows, to show the occurrence of the vocalic phonemes in their order of frequency.

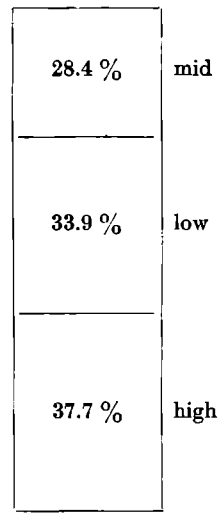

Figure 80

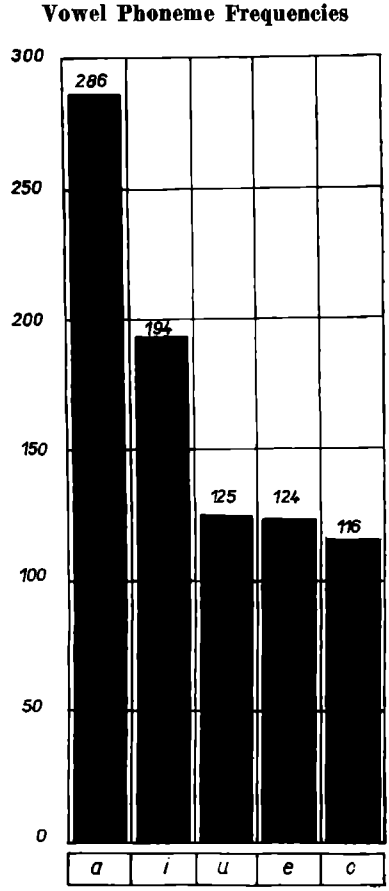

Figure 81

CONSONANTS

The child's consonantal system in the one-hundred-word period has the phonemes and allophones as indicated in Figure 82.

Their detailed characteristics will be given in the same way as in the previous period. To introduce the chapter on consonants, the following might be said: in distinction to the first developmental stage, where the stops showed instability as far as the features of voice and the velar point of articulation were concerned, the child mastered well all the stop phonemes in the second developmental stage. In regard to fricatives and affricates, however, the learning process remains unfinished, the instability being evident above all in the voiced consonants.

	Labials		Alveolars		Palatals	Velo-glottals	
	bilabials	labio-dentals	prae-alveolar	post-alveolar		velars	laryngeal
Stops	*p* *b*		*t* *d*		*ť* *ď*	*k* [*g*]	
Nasals	*m*		*n*		*ň*	[*ŋ*]	
Affricates			*c*	*č*	[*c'*] [*č'*]		
Fricatives	[*φ*] [*w*]	*f* *v*	*s* *z*	*š* *ž*	[*s'*] [*š'*] [*z'*] [*ž'*]	*x*	*h*
Laterals			*l*		[*l'*]		
Vibrants			—	—			

Figure 82

THE PLOSIVE CONSONANTS

The Plosive */p/*

Phonetic Realization

The phonetic realization of this voiceless bilabial stop phoneme is stable and no deviations either in production or in auditory impression have been noticed in the child's idiolect of this period. The non-standard allophone [p^h], which appeared in the first fifty words, is not in use at this stage of speech development.

Distribution

As to the order of frequency, */p/* comes fourth in the scale of consonants. Its 76 observed occurrences in the realizations of the first one hundred words constitute 11.9% of the stop phonemes, 8.3% of the consonantal phonemes and 4.3% of all phonemes counted. Compared to the first period, the distribution of this phoneme is considerably lower. Roughly, three factors may account for the decrease: first, the nursery forms and interjections, which have */p/* as one of the most frequently distributed consonants, are gradually replaced by other expressions, where this phoneme does not belong to the widely distributed consonants[92]; secondly, due to the stabilization of the feature of voice, */p/* does not act as a substitute for the voiced */b/*. The new examples of the *p/b* fluctuation in this period are easily explainable on the ground of perseveration and emphasis; thirdly, no data illustrating the substitution of the

[92] The frequency counts of phonemes in the child with the frequency counts in the Czech word-stock were compared in the analysis of the first fifty words, cf. *p.* 32 ff.

stop phoneme /p/ in place of the fricative phoneme /f/ exist in this developmental stage. Though /f/ is still unstable as far as the point of articulation is concerned and variants [φ] and [f] freely fluctuate, the feature of fricativity has been preserved in all instances.

As regards the place of occurrence, /p/ is not limited and occurs word-initially, word-medially and word-finally. As in the previous period the greater number stands for the initial position followed by the medial one, while the final position has the lowest percentage. Indicated in Figure 83 are the proportions of the three positions.

The vast majority of /p/ occurrences are correct. To illustrate this, a few examples follow: [*papa:*] *papá*, [*piťęťek*] *píseček*, [*papat*] *papat*, [*čepiška*] *čepička*, [*houp*] *houpy houp*, [*hop*] *hop*.

Due to the simplifying of consonantal clusters the correct medial /p/ has become the initial in the expression [*pi:jat*] *zpívat*. Of exceptional use at least two examples should be mentioned here; they are [*paf*] *baf* and [*peš*] *běž!* Both of them were realized in emphatic speech where the emphasis explains the loss of the feature of voice.

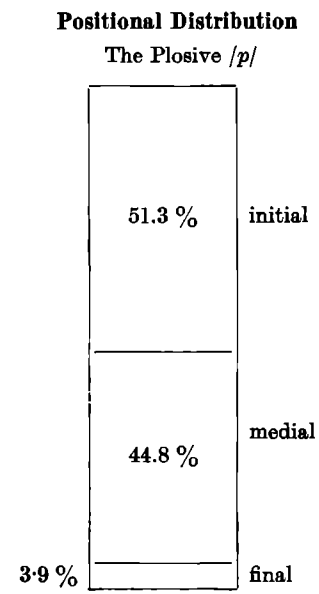

Figure 83

The Plosive /b/

Phonetic Realization

Like the voiceless bilabial phoneme /p/, its voiced counterpart /b/ is a well-mastered consonantal phoneme at this stage of speech development. No deviations compared to the Standard norm were observed and the stabilization of the feature of voice has made /b/ an equivalent partner to other stop phonemes in the consonantal system of this period.

Distribution

As to the order of frequency, /b/ comes third in the scale of consonants. Its 94 occurrences in the realizations of the first one hundred words constitute 14.7% of the stop phonemes, 10.2% of the consonantal phonemes and 5.3% of all phonemes counted. Compared to the first period the numerical data are higher here. As /b/ does not belong to those consonantal phonemes which are widely distributed in Czech, one might expect rather decreasing numbers. We have, however, mentioned before that /b/ has a very high frequency in nursery forms and interjections; in view of the fact that these two categories still form a considerable part of the child's vocabulary and /b/ is not replaced by /p/ in most of them, its rise in the frequency scale of consonants is after all not surprising.

As regards the place of occurrence, the phoneme /b/, being a voiced paired consonant, is restricted to the initial and medial positions. Of these the greater number of occurrences are initial as Figure 84 indicates. As in the first-fifty-word period, no example to disturb the neutralization of the feature of voice word-finally has been noticed in the second developmental stage.

The following are some examples to illustrate the distribution of /*b*/: [*bebe:*] *bebé*, [*bakani:*] *bakaný*, [*bumba:c*] *bumbác*, [*boli*] *boty*, *babu.lki*] *brambůrky*, [*oba:ze*] *obrázek*.

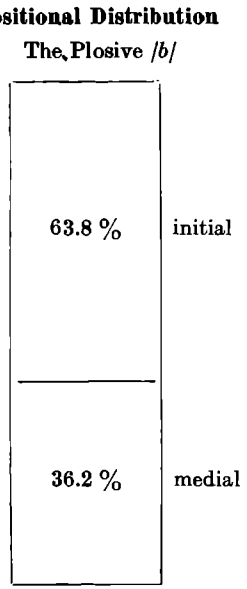

Figure 84

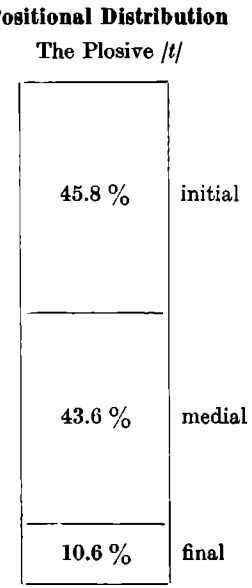

Figure 85

The Plosive /*t*/

Phonetic Realization

The phonetic realization of this voiceless alveolar stop phoneme is stable in the child's pronunciation and coincides with that of Standard Czech. The few occurrences of the non-standard palatalized allophones noticed in the first developmental stage have disappeared with the refinement of the correct point of articulation.

Distribution

As to the order of frequency, /*t*/ comes second in the scale of consonants. Its 94 occurrences in the realizations of the first one hundred words constitute 14.7% of the stop phonemes, 10.2% of the consonantal phonemes and 5.3% of all phonemes counted. No change took place in the frequency order in spite of the fact that /*t*/ has lost most of its substitutive positions. The phonemes /*d*/ and /*k*/, which were replaced by /*t*/ in the first fifty words, have been stabilized in the child's phonemic repertory of this developmental stage and are used in their proper places. The few examples of *t*/*k* fluctuation belong to the older developmental stage and the original forms containing /*t*/ are retained through perseveration, cf. [*babišta*]—[*babiška*] *babička*, [*ďitišto*]—[*ďitiško*] *dětátko*, [*cililint*]—[*cililiŋk*] *cililink*, [*tušta*]—[*kuška*] *tužka*. More frequent, however, are those examples, where /*t*/ functions as a substitution for the affricate /*c*/, cf. [*totoje*] *co to je*, [*pepite*] *čepice*, [*dut*] *duc*.

As regards the place of occurrence, the phoneme /t/ is not limited and is found word-initially, word-medially and word-finally. As in the first period, the more frequent position is the initial, which is closely followed by the medial one. The occurrence of /t/ in the final position is considerably less frequent, as Figure 85 indicates.

Examples follow to illustrate the distribution of /t/: [*teta*] *teta*, [*tetiška*] *tetička*, [*jopata*] *lopata*, [*bexat*] *běhat*, [*hajat*] *hajat*. Due to the simplifying of the consonantal clusters mentioned in connection with /p/, so too with /t/ such items are present, where the correct medial consonant is realized as the initial, cf. [*toji*]: *stojí*, [*tojelo to*] *stálo to*.

The Plosive /*d*/

Phonetic Realization

The phonetic realization of this voiced alveolar consonantal phoneme is stable in the realizations of the first one hundred words, with no outstanding deviation in comparison with the Standard pronunciation. The few examples where due to the instability of the feature of voice in the first developmental stage /d/ was replaced by /t/, have now acquired the correct form with /d/. New words which enriched the child's vocabulary in this second stage had the proper voiced consonant from the very first occurrence.

Distribution

As to the order of frequency, /d/ comes twelfth in the scale of consonants. Its 28 occurrences in the realizations of the first one hundred words constitute 4.4% of the stop phonemes, 3.1% of the consonantal phonemes and 1.6% of all phonemes counted. The fact that /d/ is stable and thus not replaced by other phonemes, while it on the other hand functions as a substitution for /z/ (cf. e.g. [*oba:de*] *obrázek*), did not influence the frequency order. Its minimal distribution in nursery forms as well as in interjections, together with the comparatively low functional load in Czech in general, has been suggested as a plausible explanation for the small number in the first fifty words and the same holds good in the first one hundred words.

Positional Distribution

The Plosive /d/

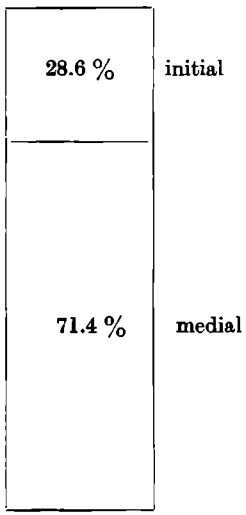

Figure 86

Being a voiced paired consonantal phoneme, /d/ is restricted in the place of occurrence. Of the two possible positions, i.e. the initial and the medial, the latter is far more frequent. Examples where /d/ occurs medially follow; [*medi:de*] *medvídek*, [*ďede*], [*ďeda*] *děda*, [*jedem*] *jedeme*, [*tadi*] *tady*, [*tudu:*] *tudú*.

As for the initial /d/ it is either correct or has arisen in cluster simplification, cf. [*duc, dut, duť, du·, dus, duk*] *duc*; [*de*] *kde*, [*do*] *kdo*.

Figure 86 shows the proportion of the initial and medial occurrences of /d/.

The Plosive /ť/

Phonetic Realization

With the refinement of the point of articulation, the more or less palatalized variants of the phoneme /ť/ which are often quoted in the findings on speech development and which appeared in a few items in the child observed in the previous period, have ceased by now. The phoneme /ť/ has thus reached the characteristic of a stable palatal stop phoneme with no deviations either in production or in acoustical impression.

Distribution

As to the order of frequency, /ť/ comes fifth in the scale of consonants. Its 75 observed occurrences in the realization of the first one hundred words constitute 11.7% of the stop phonemes, 8.2% of the consonantal phonemes and 4.3% of all phonemes counted. Compared to the statistical findings in the first-fifty-word period, the figures for /ť/ are smaller. In view of the fact that the frequent occurrence of /ť/ was then explained on the basis of its function of replacing other consonantal phonemes whose phonetic realization was unknown as yet to the child, the decreasing numbers of /ť/ are to be expected to parallel the mastering of those phonemes. Here are some examples for illustration: the form [*ťiťi*], where the correct [*ď*] was replaced by [*ť*] has acquired the proper form [*ďiťi*], [*ďeťi*]. Similar progress may be found in the former fluctuation between *k*/*ť*. Here also the forms containing [*ť*] ceased as soon as the velar phoneme /*k*/ became stabilized, cf. [*ťa:ťaťa*], [*ťiťiiťi:*], [*ťiťi:ťe*] with [*ka:kaka*], [*kikiliki:*], [*kiki:ček*]. Alongside the items where /ť/ is employed in its proper place (e.g. [*uťika:me*] *utíkáme*, [*tikťak*] *tikťak*, [*ťuki ťuk*], [*ťuk ťuk*], [*kiťi:*] [*ki:ťi:*], *kvítí*, [*kiťiški*] *kytičky*, [*eťe*] *ještě*) there are still examples where /ť/ functions as a substitute, the replaced consonants being—at this stage of speech development—the affricates and fricatives (of these the sibilants are the most frequent), cf. [*ba:ť*] *bác*, [*ňiť*] *nic*, [*ťajik*], [*taji:ček*] *čaj*, *čajíček*, [*noťi:ťek*] *nočníček*, [*noťi:k*] *knoflík*, [*ťiťi:*] *svítí*, [*piťeťek*] *píseček*. The form [*ťiťaňťi*] replacing *hodinky* is an example of the boy's neologisms, where, as the model for *nomen agentis*, the interjection *tikťak* was used. Another form, containing the palatal /ť/, requires comment, namely, the form [*boťi:*] *boty*. As is evident from the standard form, /ť/ appears in the place of /t/ in the child's pronunciation. In view of the fact that many children use the palatalization of the alveolars for emotional reasons, the replacement *t* > *ť* is not surprising. Another explanation, however, comes to mind here. The form [*boťi:*] can be looked upon as a shortened form of the item [*boťiťi*] *botičky* which was used as a parallel and where the first [*ť*] is a genuine one, the other is due to the operation of an assimilation. The latter of the two possible explanations seems to be more suitable for two reasons; first, the child does not, as a rule, use the palatalized variants; second, in intercourse with the child, the diminutives[93] were used in most cases. It might be supposed

[93] The diminutives are naturally longer than the fundamental expressions they are derived from. This is the main reason which, together with a further one — the existence of consonantal clusters — led some investigators to form the opinion that no diminutives should be used in intercourse with small children, cf. M. Seemann, *Poruchy dětské řeči*. — This opinion is, however, not accepted generally. Here are several reasons speaking against it: the diminutives form one of the vital parts of the Czech vocabulary and as such cannot be ignored. Their omission would represent an artificial cut into the language structure which is certainly not advisable in the language learning process. Besides, many original diminutives have acquired a specialized meaning where the contrast large *versus* small has become irrelevant. Thus the diminutive forms serve for

therefore that the child has not heard the form *boty* while the diminutive form *botičky* was familiar to him. The lengthening of the final vowel might be evaluated as supplementary in a shortened form where one of the syllables was dropped.

As regards the place of occurrence, the phoneme /ť/ is not limited and is found in the medial, initial and final position, in this order of frequency. The proportionate numbers are indicated in Figure 87.

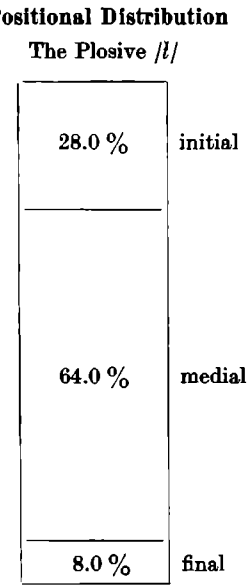

Figure 87

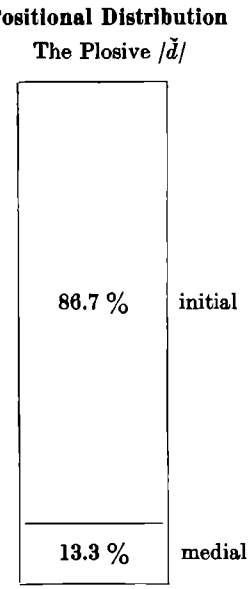

Figure 88

The Plosive /ď/

Phonetic Realization

The phonetic realization of this voiced palatal stop phoneme is stable. In spite of the fact that this consonant has a minimal functional load in Czech and the child

---

naming baby toys while the fundamental forms are *termina technica*, cf. *medvídek* (*Teddybear*) — *medvěd* (*bear*); *lodička* (*toy boat*) — *loď* (*ship*); *kyblíček* (toy pail) — *kýbl* (*bucket*); *lopatka* (*toy spade*) — *lopata* (*shovel*) etc. — Emotional reasons have probably caused the widespread use of the diminutive form for naming the *Christmas tree*, cf. *vánoční stromek, stromeček*, disregarding its actual size. — As to the length of the diminutives, we have mentioned before that polysyllables are not avoided, on the other hand, they are more frequent than are monosyllables in Czech children, (cf. the predominance of the di- and tri-syllabic words over the monosyllabic in this developmental stage). — The opinion that since diminutives contain consonantal clusters and their phonetic realization is therefore inaccassible to children, is not convincing either. In the first developmental stages, the child does simplify all the consonantal clusters regardless of whether they appear in long or short words. Sooner or later — according to his motor ability — he comes to master the correct phonetic realization of all the word-forms given him for imitation.

has thus but few models for imitation, no distortion either in production or auditory impression were recorded in his idiolect[94].

Distribution

As to the order of frequency, /ď/ comes sixteenth in the scale of consonants. Its 15 occurrences in the realizations of the first one hundred words constitute 2.4% of the stop phonemes, 1.6% of the consonantal phonemes and 0.9% of all phonemes counted. These small figures representing /ď/ are to be expected in view of the fact that it is the least widely distributed consonant in Czech and also that its distribution in baby words and interjections is very low[95].

Being a voiced paired consonant, /ď/ is restricted in the place of occurrence. Of the two positions, the initial one shows a conspicuous predominance. All the realizations in the initial position are, however, correct, representing the various forms of the expressions *dítě, děda, dědeček, díra*, cf. [*ďiťi*], [*ďiťe*], [*ďeťi*], [*ďiťiško*], [*ďiťišto*]; [*ďęďę*], [*ďędę*], [*ďeda*]; [*ďi:ja*], [*ďi.la*], [*ďila*], [*ďi:li*].

Both occurrences of /ď/ in the medial position are, on the other hand, substitutional. Thus in the item [*jiďiťe*] *Jiříček* /ď/ is employed to replace the as yet missing vibrant /ř/. In [*ďęďę*] *děda* the change *d* > *ď* is to be explained on the ground of the operation of distant assimilation where both the consonants were equalized.

The Plosive /k/

Phonetic realization

The voiceless velar stop phoneme /k/ may be considered well established in the realizations of the first one hundred words. The instances where, due to the instability of velar articulation in the previous period, /k/ was replaced by /t/, are gradually disappearing from the child's vocabulary. Examples illustrating the opposite process, however, have been recorded in this developmental stage, cf. [*kuška*] *tužka*[96]. This might suggest that the child has mastered well the phonetic realization of the phoneme /k/, is not however aware as yet of its correct distribution.

Distribution

As to the order of frequency, /k/ comes first in the scale of consonants. Its 130 observed occurrences constitute 30.3% of the stop phonemes 14.2% of the consonant phonemes and 7.4% of all phonemes counted. From the third place which /k/ occupied in the previous period, it has now acquired the leading position in the order of consonants. Several factors have contributed to this change; of them the most important are the following:

---

[94] Ohnesorg has made a similar observation, as far as the phonetic realization of /ď/ is concerned. With the exception of depalatalization, which appeared in emotional or lazy pronunciation, he finds no deviation from the Standard pronunciation, cf. *Fonet. studie, I*, p. 24, *Fonet. studie II*, p. 24.

[95] The fact that /ď/ occurs rarely in Czech is evident from the statistical findings of Mazlová and Kučera. Both authors rank it as the 24th in the scale of consonants. Similarly, it is very low in the frequency scale of Vachek. In his findings /ď/ has a minimal functional load in all parts of the word-stock except for the emotional words.

[96] Similar observations are also given by Kaczmarek, Phanhauser, Grammont, Cohen, Lewis, Nadoleczny etc. In detail, this phenomenon is dealt with by Ohnesorg, cf. *Ze srovnávací fonetiky*, p. 97.

the velar articulation being stabilized, the fluctuation *t/k* is more or less exceptional and */k/* is distributed in its proper places;

the phoneme */k/* is very frequent in interjections. As these still represent a considerable part of the child's vocabulary, (they account for 36.1% of the total of word-categories in this period) their phonemic structure no doubt exerts influence on the frequency counts;

the phoneme */k/* appears in the suffix of diminutives, viz. *-ček, -čka, -čko.* Here once again the specific proportion of the word-categories should be recalled. While the interjections are second in order, the nouns have the highest ratios (they account for 37.4% of the total of word-categories). As the large majority of them have the diminutive form, i.e. contain the phoneme */k/*, it is another category which exerts a strong influence on the frequency counts;

last but not least, the phoneme */k/* stands among the most widely distributed phonemes in the statistics of Czech. In the increasing vocabulary, this fact is making itself felt.

As regards the place of occurrence, */k/* is not limited and occurs word-initially, word-medially and word-finally. In proportion, the greatest number occurs in the medial position. Compared to the other consonant occurrences, the high frequency of the phoneme in the final position is rather surprising and perhaps requires comment. A few examples, however, offer an explanation in themselves: [*koki:kek*] *knoflíček*, [*kibi:ček*] *kyblíček*, [*ješešek*] *ježeček*, [*piseček*] *píseček*. All these and many others represent the diminutive forms, whose frequent occurrence in the child's vocabulary has been already mentioned.

Positional Distribution

The Plosive */k/*

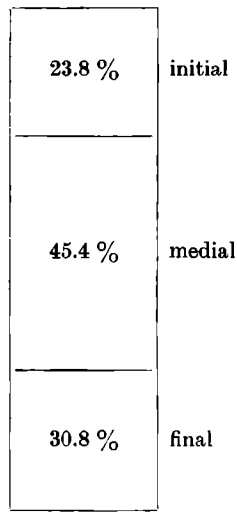

Figure 89

The following are examples illustrating the distribution of */k/* word-initially and word-medially: [*kutululu:*] *kutululú*, [*kikiliki:*] *kykyryký*, [*kuk*] *kluk*, [*kiťiški*] *kytičky*, [*bakani:*] *bakaný*, [*ďiliško*] *děťátko*, [*babiška*] *babička.*

Indicated in Figure 89 are the proportions of the three positions.

The Plosive [*g*]

The voiced allophone of the phoneme */k/* was realized in the interjection [*bagbagbak*] *bakbakbak.* As the chain of two paired phonemes—one being voiceless and the other voiced—is impossible in Czech, assimilation operates in such instances. In accordance with Standard Czech, the child chose the regressive assimilation, changing the voiceless [*k*] into the voiced [*g*]. No other occurrence of voiced velar stop [*g*] was recorded in this developmental stage.

The Nasal /m/

Phonetic Realization

The bilabial nasal phoneme /m/ has a well established phonetic realization both in manner and point of articulation. Though voiced, it is not opposed to any other phoneme solely by this feature. When compared with its realization in Standard Czech, no deviations either in production or in auditory impression show in the child's pronunciation.

Distribution

As to the order of frequency, /m/ comes sixth in the scale of consonants. Its 71 occurrences in the realizations of the first one hundred words constitute 11.1% of the stop phonemes, 7.7% of the consonantal phonemes and 4.0% of all phonemes counted. The explanation of these comparatively high figures was offered in the first-fifty-word period. The frequent distribution of /m/ in nursery forms and interjections exerts a considerable influence on the frequency counts of this developmental stage as well. The adherence of /m/ to those consonantal phonemes which have a high functional load in Czech, explains its wide distribution in those words which newly enter the child's vocabulary.

As regards the place of occurrence, /m/ is not limited and appears word-initially, word-medially and word-finally. As to the proportions, the distribution in the three positions is well balanced (see Figure 90).

Most of the distributional occurrences of /m/ are correct and have more or less corresponding equivalents in Standard Czech, cf. [*ma:ma*] *máma*, [*mala:*] *malá*, [*malinta:*] *malinká*, [*muk*] *muk*!, [*maso*] *maso*, [*hača:m*] *hačám*, [*utika:m*] *utíkám*.—Of its exceptional use, its occurrence in the following examples are of interest: [*mema:me*] *nemáme*, [*mema:*] *nemá*, [*momonos*] *dobrou noc!*. Distant assimilation seems to be a more plausible explanation than the attribution of the substituting function to /m/, as all consonantal phonemes which are replaced by /m/ in the above mentioned instances (i.e. /n/, /d/, /b/) are well established in the child.

The Nasal /n/

Phonetic Realization

With the refinement of the point of articulation, the phonetic realization of this alveolar nasal phoneme has become fairly stabilized at this stage of speech development. The non-standard palatalized variants of /n/ which were registered in the first-fifty-word period, have disappeared from the child's vocabulary and no further deviations from the standard pronunciation were observed in the child's idiolect. Like /m/, /n/ is a voiced phoneme, not however opposed to any other phonemes as far as the feature of voice is concerned.

Distribution

As to the order of frequency, /n/ comes eleventh in the scale of consonants. Its observed 24 occurrences in the realizations of the first one hundred words constitute 6.6% of the stop phonemes, 4.6% of the consonantal phonemes and 2.4% of all

phonemes counted. The low functional yield of this phoneme in nursery forms and interjections was offered as an explanation for the small frequency count which represents /n/ in the first-fifty-word period. The same holds good for this developmental stage. The torrent of new words—where /n/ is a widely distributed consonant—is not so strong as to influence positively the frequency count.

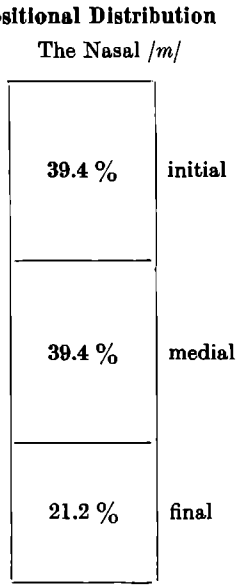

Figure 90

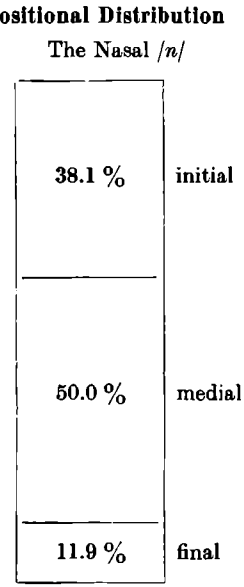

Figure 91

On the contrary to distribution, the phoneme /n/ is not limited in regard to place of occurrence, and appears in initial, medial and final position. As to the order of frequency, the medial position comes first and is followed by the initial one. The final position shows the smallest number (see Figure 91).

With the exception of the item [*bano:n*], where the first of the two /n/s stands in place of the proper /l/ (cf. *balon*] all the occurrences have their correct places, as the following examples and their standard equivalents illustrate: [*ne*] *ne*, [*ne:ne:*] *né né*, [*neňi:*] *není*, [*noli:lek*] *nočníček*, [*bela:nek*] *beránek*.—Due to the cluster simplification, however, some of the proper medial occurrences are initial in the child's pronunciation, cf. e.g. [*noli:k*], [*nofi:k*] *knoflík*.

The Plosive [ŋ]

In distinction to the first developmental stage, the velar allophone of /n/ appeared in the child's repertory now, cf. the interjection [*cililiŋk*]. Though it is the sole example, containing [ŋ], it might be said here that this allophone appears in the child at the very moment when the velar consonants /k/ and /g/ are established in his phonemic

system and when he starts realizing the consonantal clusters[97]. In the older forms where /t/ still functions as a substitution for /k/, [n] is naturally produced at the alveolar point of articulation, cf. [*cililint*]. No instance has been recorded to illustrate that the child would realize the alveolar [n] in the velar environment[98].

The Plosive /ň/

Phonetic Realization

But for slight deviations in the degree of palatalization the phonetic realization of /ň/ was established already in the first developmental stage. After refining the point of articulation the phoneme has acquired the characteristics of being a stable palatal nasal consonant, voiced but not opposed to any other phoneme solely by this feature.

Positional Distribution

The Nasal /ň/

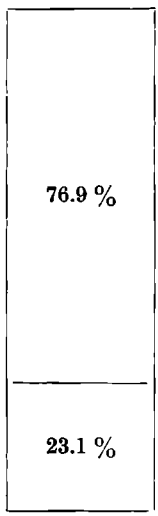

Figure 92

Distribution

As to the order of frequency, /ň/ comes seventeenth in the scale of consonants. Its 13 occurrences in the realizations of the first one hundred words constitute 2.0% of the stop phonemes, 1.4% of the consonantal phonemes and 0.7% of all phonemes counted. In spite of the fact that /ň/ belongs to those consonants which occur in the first half of the frequency scale of consonants and that, compared to other palatal phonemes, /ň/ has by far the widest distribution in Czech, nevertheless its distribution in the child's vocabulary is very rare and, in comparison with the previous stage, the numbers representing /ň/ show a decreasing tendency.

As in the first-fifty-word period, the phoneme /ň/ is also restricted as far as the place of occurrence is concerned in this one-hundred-word period. Of the three possible positions only the initial and the medial are represented in this developmental stage. In proportion, the initial position shows a high preponderance. All occurrences in this position are, nevertheless, correct but for those which, due to simplification, have become initial instead of being genuine medial ones, cf. [*ňiš*], [*ňiš'*], [*ňit*], [*ňic'*], [*ňič*], [*ňic*] *nic;* [*ňau:*], [*ňau*], [*ňauňau*] *mňau.*

As to the medial position, /ň/ appeared in the verbal form [*neňi:*] *není* and in disyllabic realization of the interjection [*ňauňau*] *mňaumňau.* The third occurrence was recorded in the item [*ťiťaňťi*]. This word represents one of the child's new formations where the onomatopoeic sound of the clock induced him to form the analogous *nomen agentis* instead of the proper form *hodinky.* — Such instances where /ň/ func-

[97] A similar view on the appearance of the velar allophone of /n/ has been taken by Ohnesorg, cf. *Fonet. studie I*, p. 28 and by Hála, cf. *Několik příspěvků*, p. 195.

[98] Hála, however, admits such realization in the hypercorrect or individual pronunciation, cf. *Uvedení*, p. 113.

tioned as an expressive variant of /n/ in emotional pronunciation in the previous stage, were not noticed in this period.

Indicated in Figure 92 are the proportions of the initial and medial positions of the phoneme /ň/.

Summary

In summarizing the findings on the stop phonemes in the realizations of the first one hundred words these conclusions may be drawn:

All the plosives belonging to the Standard Czech consonantal system appear in the child's consonantal system and their phonetic realization is well established.

As before, however, discrepancies are found in the frequency counts where the numbers of occurrences in the child's speech do not resemble those which are reported for Standard Czech.

The following table shows the occurrences of all the plosive consonants in their initial, medial and final positions as well as in total numbers.

The Plosive Consonants

	Initial		Medial		Final		Total numbers			
								stops	consonants	phonemes
p	39	51.3 %	34	44.8 %	3	3.9 %	76	11.9 %	8.3 %	4.3 %
b	60	63.8 %	34	36.2 %	—	—	94	14.7 %	10.2 %	5.3 %
t	43	45.8 %	41	43.6 %	10	10.6 %	94	14.7 %	10.2 %	5.3 %
d	8	28.6 %	20	71.4 %	—	—	28	4.4 %	3.1 %	1.6 %
ť	21	28.0 %	48	64.0 %	6	8.0 %	75	11.7 %	8.2 %	4.3 %
ď	13	86.7 %	2	13.3 %	—	—	15	2.4 %	1.6 %	0.9 %
k	31	23.8 %	59	45.4 %	40	30.8 %	130	20.3 %	14.2 %	7.4 %
[*g*]	—	—	2	100.0 %	—	—	2	0.3 %	0.2 %	0.1 %
m	28	39.4 %	28	39.4 %	15	21.2 %	71	11.1 %	7.7 %	4.0 %
n	16	38.1 %	21	50.0 %	5	11.9 %	42	6.5 %	4.6 %	2.4 %
ň	10	76.9 %	3	23.1 %	—	—	13	2.0 %	1.4 %	0.7 %
Total	269	42.0 %	292	45.6 %	79	12.4 %	640	100.0 %	69.7 %	36.3 %

Figure 93

In terms of features, stop articulation has been learned well by the child. This applies also to the feature of front *versus* back where the child—as was already reported in the first developmental stage—shows a greater predilection for the front stops as compared to the back ones. In distinction to the first stage, where the velar articulation was unstable as yet, all points of articulation are well established now. Figures 94—97 indicate the proportion of the contrasts based on the point of articulation.

Nasality is another well established feature in the child. Unlike the first period, where the velar allophone of /n/ was missing, the series of nasals is complete at this stage of speech development. As to the proportions, the nasals are less frequently distributed as compared to the oral stop phonemes (see Figure 98).

In distinction to the first-fifty-word period, the feature of voice might be considered well established in the realizations of the first one hundred words. The frequent

Stop Phonemes
Points of Articulation

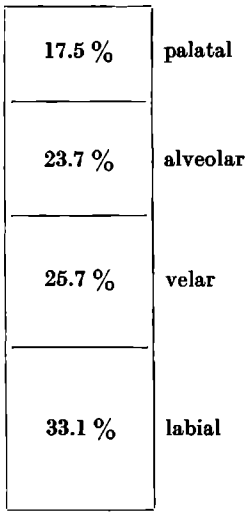

Figure 94

Stop Phonemes
(including nasals)
Points of Articulation

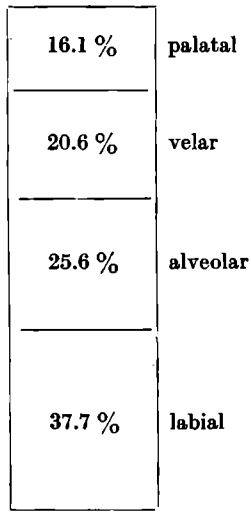

Figure 95

Stop Phonemes
Front *versus* Back

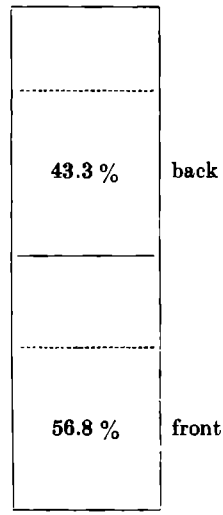

Figure 96

Stop Phonemes
(including nasals)
Front *versus* Back

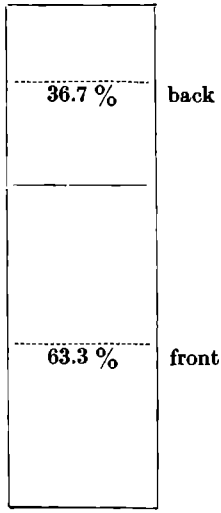

Figure 97

Stop Phonemes
Oral *versus* Nasal

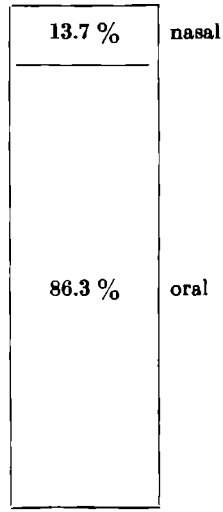

Figure 98

fluctuation of voiceless and voiced counterparts in the previous stage disappeared in most of the instances and the few cases still existing are easily explicable on different grounds, of which emphatic pronunciation is the most acceptable. In the statistics, nevertheless, the voiceless stop phonemes still predominate even in those counts where the nasals are incorporated. In Figures 99 and 100 we have compared the occurrences of the voiceless and voiced phonemes, first, without nasals, secondly, including nasals.

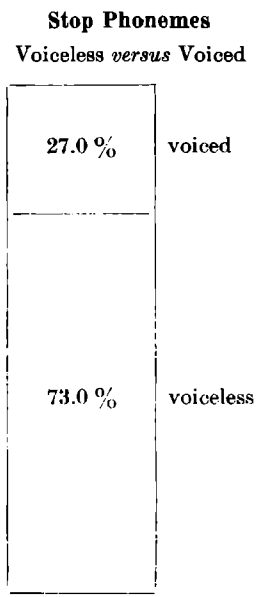

Figure 99

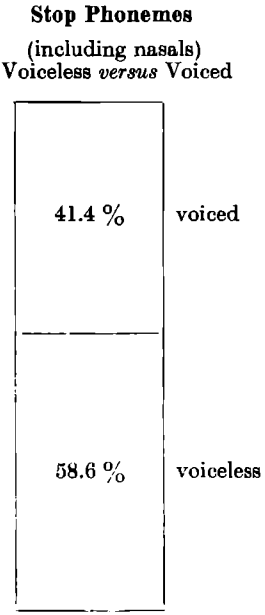

Figure 100

No new additional sound differences appeared in the realizations of the first one hundred words while the aspiration and palatalization reported in the previous period ceased to be in use with the refinement of the correct articulation of the stop and nasal phonemes.

THE FRICATIVE CONSONANTS

The Fricative /f/

As in the realizations of the first fifty words, so too in the realizations of the first one hundred words, the correct articulation of the voiceless labiodental fricative phoneme /f/ has not been mastered. The fluctuation between bilabial [φ] and labiodental [f] bears evidence of the instability of the correct point of articulation. The feature of fricativity, on the other hand, seems to become stabilized, as none of the former instances where the fricative [f] was replaced by the plosive [p] was registered at this stage of development.

As for distribution, /f/ had nine occurrences, of which one was in the medial position, cf. [*nofi:k*] *knoflík*. The eight remaining occurrences were word-final and appeared in various realizations of the interjection *haf* and *baf*, cf. [*haf, hawhaf, haφ, paφ, baφ, paf, baf, bawbaf*].

The Fricative /v/

The instability of the phonetic realization noticed in the voiceless labiodental fricative phoneme /f/ is more evident in its voiced counterpart /v/. Contrary to the first-fifty-word period where /v/ did not appear at all, it has three occurrences in the child's vocabulary now. All of them, however, are produced at the bilabial point of articulation. Two medial ones have arisen in the voiced environment due to the operation of the voice assimilation, cf. [*bawbaf*] *baf, baf* [*hawhaf*] *haf haf*. One instance of its initial occurrence is a substitutional one, cf. [*wa:ba*] *žába*. The distant assimilation of place of articulation, together with the unstable characteristics of the sibilant /ž/, might account for this distortion.

The Sibilant Phonemes

In view of the general opinion, confirmed in most findings on speech development, that sibilants are acquired very late, their instability in the realization of the first one hundred words was expected. Contrary to the first developmental stage where /z/ was missing as yet, both pairs of hissing and hushing sounds are complete now.

The Fricative /s/

The learning process of the phonetic realization of the hissing sibilant /s/ has not been accomplished at this stage of speech development. While the feature of fricativity has been preserved in all occurrences, there is instability concerning the place of articulation and the tongue position. As a result, the more or less palatalized allophones of /s/ freely fluctuate.

As to distribution, /s/ has nineteen occurrences in the realizations of the first one hundred words. Of those which appeared in their proper places, the following were the most frequent: [*nasono:*], [*nasonou*] *na shledanou*, [*mas'o, maso, masi:ško*] *maso, masíčko*, [*s'ama*] *sám*, [*pi:s'eɬek*] *píseček*. The remaining observed occurrences were substitutional. In most cases, the affricate /c/ was replaced, cf. [*pasi, pasi*], [*pas'i pas'i*] *paci paci*, [*dus*] *duc*, [*ňis*] *nic*, [*bumas*] *bumbác*, [*sililint*] *cililink*, [*so*] *co*. Another consonant for which /s/ acted as substitution was the velar /x/, cf. [*s'eba*] *chleba*.

The Fricative /z/

Contrary to the first-fifty-word period where /z/ did not appear, it has two occurrences in the realizations of one hundred words. Instability, however, is shown both in place and manner of articulation. The form [*oba:ze*] alternates with [*oba:de*] *obrázek*. In the item *žába* the palatalized allophone of /z/ acts as one of the substitutions for /ž/, cf. [*a:ba*], [*z'a:ba*], [*ba:ba*], [*wa:ba*].

The Fricative /š/

Of the sibilant phonemes, the hushing /š/ seems to be the most stable. The point of articulation, however, has not been mastered either and palatalized allophones of /š/ occur in all positions. The feature of fricativity, on the other hand, is preserved in all instances.

In distribution, /š/ has a total number of 52 occurrences and is not limited in positions. Besides being distributed in its proper place it functions as substitution for /ž/, /č/, /c/ and /s/. In the voiceless environment and word-finally its occurrence in place of /ž/ is orthoepic. The other instances, however, are to be explained on the basis of the as yet unstable phonetic realization of the above mentioned consonants. The following are some examples: [*puši:*] *prší, plši:*] *prší,* [*pešejo*] *pršelo,* [*pipuška*] *pipuška,* [*tušta*] *tužka,* [*beš, peš*] *běž,* [*ješešek*] *ježeček,* [*botiška*] *botička,* [*babiška*] *babička,* [*mašo*] *maso,* [*ňiš*] *nic.*

The Fricative /ž/

The instability of the phonetic realization of this voiced hushing sibilant is evident both in place and manner of articulation. This is illustrated in the existence of the palatalized allophones on the one hand and in its fluctuation with the corresponding stop phoneme /ď/ on the other, cf. [*ž'ež'ek*]—[*jeďek*] *ježek.* The form [*ješešek*] shows further the instability of the feature of voice. As in the previous period, so too in this one, /ž/ functions as a substitution for /ř/ in the boy's name *Jiři.* Even in this example, however, fluctuation *ž/ď* was recorded, cf. [*jiži*]—[*jiďi:ček*].

The Fricative /j/

Phonetic Realization

The phonetic realization of this palatal fricative phoneme is well established and has, as in the realizations of the first fifty words, a stable place in the consonantal system in this period. Like the nasals, /j/ is voiced, while no voiceless counterpart exists. Speaking for its stability is the fact that—unlike the other fricatives in this developmental stage—/j/ is neither dropped nor replaced by other consonants. On the other hand, it often functions as a substitution for those consonants whose phonetic realization has not been mastered as yet.

Positional Distribution

The Fricative /j/

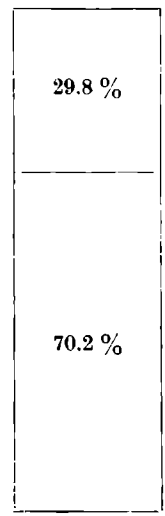

Figure 101

Distribution

As to the order of frequency, /j/ comes ninth in the scale of consonants. Its 47 observed occurrences in the realizations of the first one hundred words constitute 16.8% of the fricative phonemes, 5.1% of the consonantal phonemes and 2.7% of all phonemes counted. This relatively high figures representing /j/ were reported in the first period as well. As an explanation, its easy phonetic realization, close relation with /i/ and frequent occurrence in nursery forms and interjections were offered.

The same holds good in this developmental stage. The frequency was—and still is—further affected by the widespread function of /j/ in replacing other fricative phonemes. Of these, the vibrant /r/ and the lateral /l/ are the most frequently replaced. There is, however, a difference which should be mentioned here: while /j/ and /l/ fluctuate, /r/ is replaced in all cases.

As regards the place of occurrence, /j/ appears only in two of the three possible positions, namely, the medial and the initial, in the said order of frequency. The sole instance of the final position of this phoneme in the last period i.e. [ťaj] *čaj* is not in use any more. Its disappearance is due to the child's predilection for the diminutive forms, cf. [ťajik], [ťaji:ťek], [ťaji], [ťaji·].

Examples illustrating occurrences of /j/ both correct and substitutional, follow: [*jeje*] *leje*, [*ji:ček*], [*jiďi:ček*], [*jiži*], [*ji:ka*] *Jiří*, [*je*] *je*, [*jØ:žØ:*] *ježek*, [*jopata*] *lopata*, [*hajat*] *hajat*, [*hajaji:*] *hajali*, [*papaji*] *papali*, [*majinta:*] *malinká*, [*hapajo*] *hapalo*, [*bejani duc*] *berany duc*, [*beja:nek*] *beránek*.

Figure 101 indicates the proportions of /j/ in the two positions.

Positional Distribution

The Fricative /h/

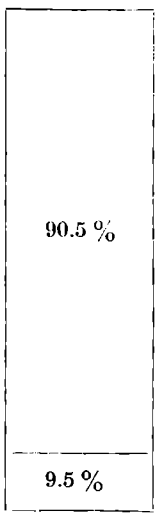

Figure 102

The Fricative /x/

This velar fricative phoneme had nine total occurrences in the realizations of the first one hundred words. As in the first period, so too in this second one the phonemic status of /x/ is rather dubious. Its proper occurrence is reprecented only in the various realizations of the interjection *chr chr*, cf. [*xœxɤ*, *xuxu*, *xuxu:*]. The examples [*axoj*], [*bexat*], [*xamba*], on the other hand, illustrate its function as a substitution for the laryngeal phoneme /h/. While in the first of the three examples the fluctuation *x*/*h* appears, the remaining two are realized only with the voiceless [*x*].

The Fricative /h/

Phonetic Realization

The stable phonetic realization of /h/ has been reported already in the first developmental stage. In distribution, however, this phoneme was considerably restricted and appeared only in interjections and a few baby words derived from them. Other word-categories were not recorded in the first period. In this second one, however, words containing /h/ enter the child's vocabulary; in all of them, nevertheless, /h/ is replaced by /x/, cf. the above-mentioned [*axoj*], [*bexat*], [*xamba*] *ahoj*, *běhat*, *hanba*. The interjections and baby words, on the other hand, have preserved the genuine realization with [*h*] even in the one-hundred-word period.

Distribution

As to the order of frequency, /h/ comes tenth in the scale of consonants. Its 42 observed occurrences in the realizations of the first one hundred words constitute 15.1% of the fricative phonemes, 4.6% of the consonantal phonemes and 2.4% of all phonemes counted. Compared to the previous period, the figures are smaller. This is

not surprising in view of the fact we have spoken about in the paragraph on its phonetic realization. Not all of the first fifty words have their continuation in the second period and in the new expressions the phoneme /h/ is replaced by /x/.

As regards the place of occurrence, /h/—being a voiced phoneme—is restricted to the initial and medial positions. As in the first developmental stage, the initial position strikingly predominates, as Figure 102 illustrates.

The following are examples containing /h/: [*haf, hawhaf*] *haf*, [*ham*] *ham*, [*hu:ha:*], [*hu:hu:*] *húhú*, [*haja:m*], [*ha:ha:m*] *hajám*, [*hača:m*] *hačám*, [*hała:*] *hačá*, [*hija, hija, hijaja:*] *hijá*.

THE LATERAL CONSONANTS

The Lateral /l/

Phonetic Realization

As with the majority of the fricative phonemes, so too the learning process of the phonetic realization of the lateral /l/ has not been fully accomplished in this developmental stage. Instability is shown above all in the point of articulation, where the area varies between the alveolar and palatal points. Concomitantly, the more or less palatalized allophones of /l/ appear. As Standard Czech has no such allophones in the consonantal system, the unstable tongue position seems to be the only possible explanation for their existence in the child. Laterality, on the other hand, may be considered an established feature. It has been preserved in most of the instances and the remainder of the data where /l/ and /j/ still fluctuate are easily explicable on the ground of perseveration.

In addition, the syllabic allophone [l̩] newly appears in the child's consonantal system. Its realization might suggest that he starts to be aware of the contrast liquid *versus* consonant.

Positional Distribution
The Lateral /l/

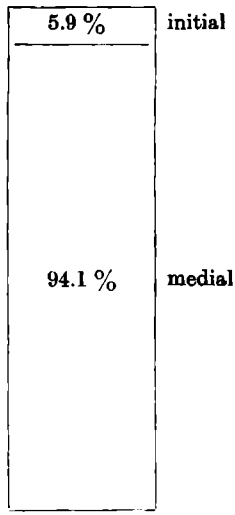

Figure 103

Distribution

As to the order of frequency, /l/ comes eighth in the frequency scale of consonants. Its 51 observed occurrences in the realizations of the first one hundred words constitute 18.3% of the fricative phonemes, 5.5% of the consonantal phonemes and 2.9% of all phonemes counted. Compared to the figures representing /l/ in the previous period, the distribution of this phoneme shows an increasing tendency. Several factors are present to explain the greater number of occurrences of /l/ in this second period. The establishment of the feature of laterality is one of them, as many of the items where /j/ replaced /l/ before, have acquired the correct form with /l/. Moreover, the opposite process where /l/ comes to replace the proper /j/ was recorded now, cf. [*halali*] *hajaii*.

The gradual change in the phonemic structure of the child's vocabulary is another factor. While in nursery forms the phoneme /l/ had a minimal functional burdening,

it is more often distributed in interjections and comes first and second in the frequency scales of Kučera and Mazlová. In the increasing vocabulary, this fact is felt.

Besides the proper occurrences, /l/ takes the function of a substitution for the vibrant /r/. Though alternating with /j/ in this function, /l/ gets the upper hand at this stage of speech development. In view of the fact that /r/ is another widely distributed consonant in Czech, the frequency count of /l/, which is its substitution, is no doubt influenced by this phenomenon.

In distinction to the first developmental stage, the syllabic variant of /l/ appeared in the realizations of the first one hundred words, cf. [*plši:*] *prší*. As the example and its Standard Czech equivalent indicate, this occurrence is also substitutional.

Being a sonant, /l/ is not limited in place of occurrence in Czech. In the realizations of the first one hundred words, however, only two of the three possible places are represented, viz. the initial and the medial position. Of them the medial is far more frequent, cf. Figure 103, where the proportions are shown. Some examples of occurences of /l/ in both the positions follow; [*la.la*], [*la:lala:*], [*lalala:*] *lalalá*, [*hapalo*] *hapalo*, [*kutululu:*] *kutululú*, [*cililiŋk*] *cililink*, [*tolo*], [*toło*] *kolo*, [*ďi.la*] *díra*, [*bambu.lki*] *brambůrky*, [*baboli*] *brambory*.

THE VIBRANT CONSONANTS

The Vibrants /r/, /ř/

As in the first-fifty-word period, so too in the first-one-hundred-word period the vibrants /r/ and /ř/ are absent in the child's consonantal system.

As to /r/, it is either dropped, (cf. [*oba:ze*] *obrázek*) or replaced by the lateral /l/ (cf. [*kikiliki:*] *kykyryký*) or—less frequently in this developmental stage—by the fricative /j/ (cf. [*e:jo*] *aero*). In a few examples, the supplementary lengthening for the loss of this vibrant consonant was recorded, cf. [*ji:ka*] *Jirka*, [*bambu:ki*] *brambůrky*.

The vibrant /ř/, too, is either dropped (cf. [*bi:ško*] *bříško*), or replaced. Two of the consonants performed the function of a substitution in this developmental stage, viz. the plosive /ď/ and the fricative /ž/. As both of them are voiced and it is the voiced allophone of /ř/ they are replacing (cf. [*jiďi:ček*] *Jiříček*, [*jiži:*] *Jiří*), it seems that the child is aware of the feature of voice even in that consonant whose phonetic realization is quite inaccessible to him.

THE SEMI-OCCLUSIVE CONSONANTS

The Affricates /c/, /č/

The phonetic realization of the hissing affricate /c/ has not been mastered as yet. Instability is shown both in manner and point of articulation. The nineteen occurrences, which appeared mostly in interjections, were the more or less palatalized allophones of the phoneme /c/. More often, however, /c/ was replaced. The choice of the substitutions shows once again the unawareness of the feature of semi-occlusivity. The alveolar /t/, palatal /ť/ and palatalized /s/ freely fluctuated in this function.

What was said of the hissing affricate /c/ might be applied in characterizing the hushing affricate /č/. Its phonetic realization is unstable in manner and place of articulation and also its distribution is limited mostly to interjections and the baby words derived from them. Most of its 20 occurrences are continuants from the previous period, enriched by further analogous formations. Newly, /č/ appears in the diminutive suffix *-ček, -čka, -čko*, where, however, it is replaced in the majority of instances. In substituting, two linguistic strata seem to meet; while in those examples which represent the older developmental stage, the plosive /t/ is used as a substitution, it is, however, the fricative /š/ which has this function in the expressions which newly appear.

Summary

The table 108 shows the occurrences of all the fricative and semi-occlusive phonemes in their initial, medial and final positions as well as in total numbers.

To summarize the findings on fricatives and affricates in the realizations of the first one hundred words, these conclusions may be drawn;

Of the existing fricative phonemes in the Czech consonantal system the phonemes /r/ and /ř/ are still absent from the child's system and the status of the phonemes /h/ and /x/ is dubious. With the exception of /j/ the learning process of the phonetic realization of the fricatives has not been accomplished and nor has the learning process of the affricates.

In terms of features, the fricative articulation has been established well as far as the voiceless fricatives are concerned. In the voiced consonants, on the other hand, the fluctuation between stop and fricative articulation is still widespread. Of the other distinctions based on manner of articulation, only laterality may be considered an established feature. The vibrativity and semi-occlusivity, on the other hand, have not been mastered at this stage of speech development.

The contrast front *versus* back is another established feature in fricative consonants. The point of articulation, however, still shows a certain instability. Its misuse gives rise to a number of allophones untypical in Standard Czech, as e.g. the bilabial [φ], bilabial [w], palatal [l'], palatalized [s', š', z', ž', c', č']. Figure 104 shows the proportional occurrences of the fricative phonemes as to the point of articulation. The preponderance of the consonants produced in the front of the mouth which was characteristic for the stop phonemes only in the findings of the previous period, is now evident with the fricative phonemes as well, cf. Figure 105.

It is, however, the feature of voicing which is of greatest interest. The fluctuation between voiceless and voiced members would suggest instability of this feature. The child's selection of the substitutes for the as yet unstable fricative phonemes shows, however, that he is aware of the feature of voice, as the following examples illustrate: the voiceless affricates are replaced by voiceless consonants in all

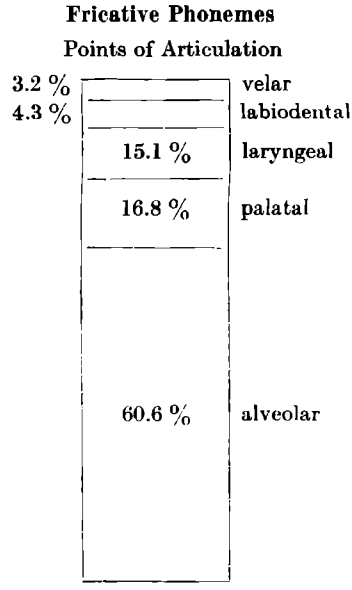

Figure 104

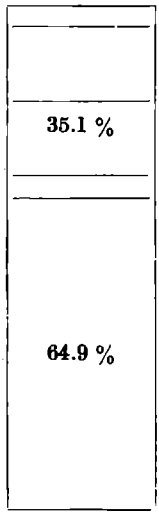

Figure 105

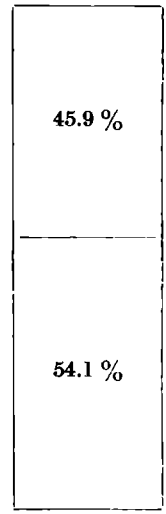

Figure 106

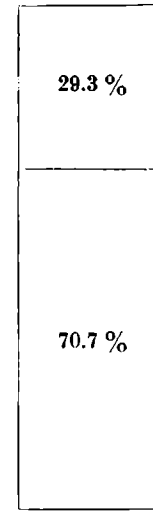

Figure 107

The Fricative Consonants

(including the affricates)

	Initial		Medial		Final		Total numbers			
								fricatives	consonants	phonemes
f	—	—	1	11.1 %	8	88.9 %	9	3.2 %	0.9 %	0.5 %
v	1	33.3 %	2	66.7 %	—	—	3	1.1 %	0.3 %	0.2 %
s	5	26.3 %	10	52.6 %	4	21.1 %	19	6.8 %	2.1 %	1.1 %
z	1	50.0 %	1	50.0 %	—	—	2	0.7 %	0.2 %	0.1 %
š	2	3.9 %	44	84.6 %	6	11.5 %	52	18.6 %	5.7 %	2.9 %
ž	1	16.7 %	5	83.3 %	—	—	6	2.2 %	0.7 %	0.3 %
j	14	29.8 %	33	70.2 %	—	—	47	16.8 %	5.1 %	2.7 %
x	4	44.4 %	5	55.6 %	—	—	9	3.2 %	1.0 %	0.5 %
h	38	90.5 %	4	9.5 %	—	—	42	15.1 %	4.6 %	2.4 %
l	3	5.9 %	48	94.1 %	—	—	51	18.3 %	5.5 %	2.9 %
r	—	—	—	—	—	—	—	—	—	—
ř	—	—	—	—	—	—	—	—	—	—
c	4	21.0 %	6	31.6 %	9	47.4 %	19	6.8 %	2.0 %	1.1 %
č	4	20.0 %	10	50.0 %	6	30.0 %	20	7.2 %	2.2 %	1.1 %
Total	77	27.6 %	169	60.6 %	33	11.8 %	279	100.0 %	30.3 %	15.8 %

Figure 108

cases, no matter to which category they belong as far as the manner of articulation is concerned, cf. /*t*/, /*ť*/, /*s*/, /*š*/ or any of their palatalized allophones. Accordingly, the vibrant /*r*/ is, as a voiced consonant, replaced by voiced substitutes, i.e. /*ť*/ or /*j*/. —

Only instances containing voiced allophone of /ř/ appeared in the child's vocabulary in this developmental stage. Both the selected substitutes /ď/ and /ž/, which replaced this allophone, are voiced.

In accordance with the findings in the previous period, the voiced fricatives are more frequent than the voiceless. The ratio is, however, more evenly balanced now. When excluding those fricatives which are voiced but not opposed to any other phoneme solely by this feature, the voiceless fricatives get the upper hand over their voiced counterparts. Figure 106 shows the ratio of the voiced and voiceless fricatives including sonants. In Figure 107, on the other hand, the ratio of the paired voiceless *versus* voiced fricatives is indicated.

Conclusion

Before leaving the description of consonants in the realizations of the first one hundred words, the question of which of the features phonemically relevant in Standard Czech are established in the child's consonantal system at this stage of speech development will be dealt with.

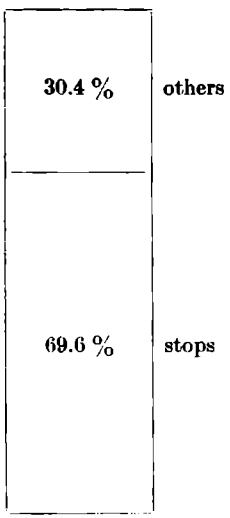

Figure 109

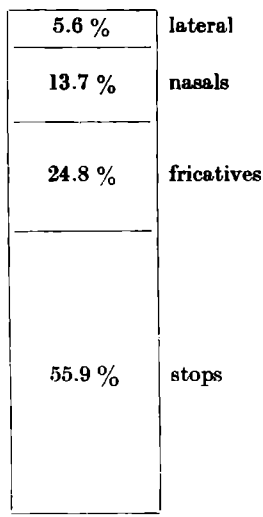

Figure 110

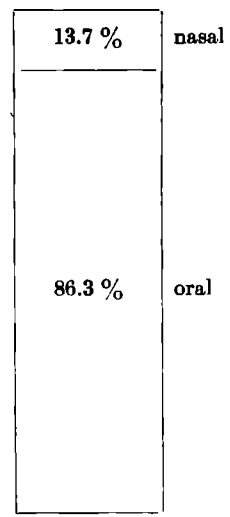

Figure 111

From the six manners of articulation upon which the functionally relevant distinctions of consonants in Czech are based, the following four might be considered as established ones in the child: occlusivity, nasality, fricativity and laterality. In distinction to the first developmental stage, laterality is now added. Semi-occlusivity, on the other hand, remains but an imperfectly learned feature even in this period, while the vibrants which would represent the last distinction—vibrativity—did not appear at all.

In accordance with the findings in the first developmental stage there are, nevertheless, contradictions even within those features which we consider as established ones. These appear above all in the lesser or greater stability of the phonetic realization of the consonantal phonemes which the above-mentioned features represent, and in the distribution of the phonemes in the child's vocabulary. Thus the stops remain not only the most stable but also the most widely distributed consonantal phonemes, in spite of the fact that the child knows how to produce the majority of the consonant repertory. The fricatives, on the other hand, display a rather complicated learning process and their establishing is very much slower. They are very often dropped and replaced. In simplifying the consonantal clusters the plosive is preserved while the fricative is left out. Their distribution is, concomitantly, considerably lower. The stops account for 55.9% of all consonant occurrences and with the addition of nasals (13.7%) the plosives constitute 69.6% of the consonants found. Figure 109 shows the proportions.—A more detailed breakdown showing the oral stops, nasals, the lateral and fricatives (which include the affricates at this stage of speech development) is given in Figure 110.—The comparatively low distribution of the nasals may surprise in view of nasality being one of the first well-established features in consonants. Of the three nasal phonemes which represent this feature in Standard Czech, however, only the bilabial /*m*/ has a fair distribution in the child's vocabulary, while the functional load of the remaining two is relatively low. The proportional occurrences of oral and nasal consonants are indicated in Figure 111.

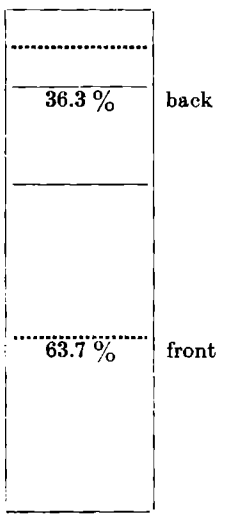

Figure 112

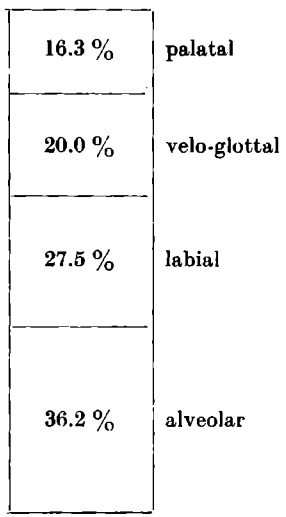

Figure 113

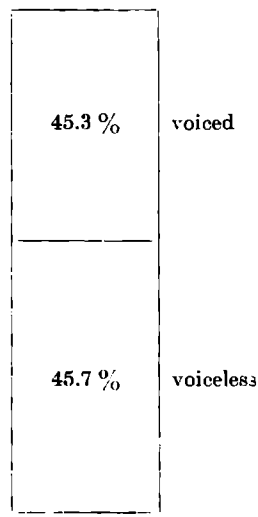

Figure 114

Similar findings are at hand as far as the distinctions based upon the oppositions of point of articulation are concerned. As in the realizations of the first fifty words, so too in the realizations of the first one hundred words the child uses the following areas: labial, alveolar, palatal and velo-glottal, the manner of articulation further

determining a more exact point within the articulatory area. As compared to Standard Czech, all the phonemically relevant distinctions here appear in the child as well. The consonants which are produced within these areas, however, differ both in their stability and distribution. While all the stops and nasals have their point of articulation well established, this varies as yet in fricatives and affricates—as the number of non-standard allophones clearly indicates. Roughly speaking, the front consonants display a more mature stage than do the back consonants. This applies both to the phonetic realization and the distribution. Figure 112 shows the ratio between the front and back consonants. The proportional occurrences of all consonant phonemes as to the point of articulation is given in Figure 113.

In characterizing the feature of voicing, the voiceless consonants are again—which is in accordance with the findings in the first developmental stage—more stable and more widely distributed as compared to the voiced consonants—a phenomenon reported in languages generally. Figure 114 indicates the ratio of these two groups. In detail, the feature of voice is well established in stops and both the voiceless and voiced counterparts have their firm place in the child's consonantal system and a fair distribution in his vocabulary. The voiceless stops are, nevertheless, far more frequent. — In fricatives, on the other hand, the feature of voice is but imperfectly learned. Its instability shows in fluctuation of voiceless and voiced members. As for distribution, the voiced fricatives predominate. The frequency count is, however, influenced by the existence of sonant fricatives in the consonantal system. In pairs, the voiceless members have the upper hand both in stability and distribution.

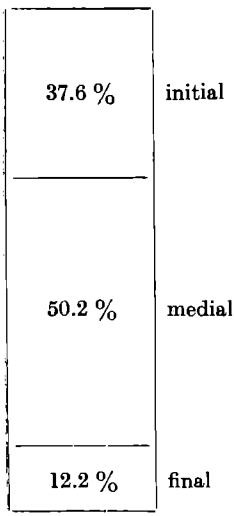

Figure 115

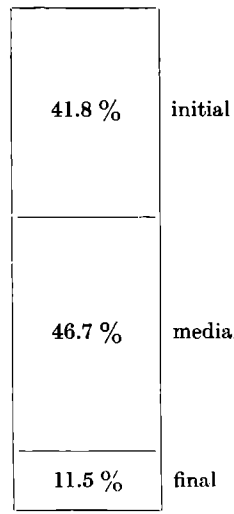

Figure 116

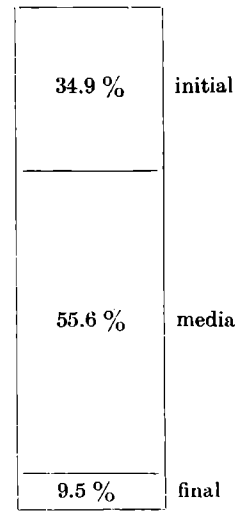

Figure 117

In distinction to the first developmental stage, the opposition voiceless *versus* voiced is used contrastively in this second stage, cf. [*do to je*]—[*to to je*] *kdo to je—co to je.*

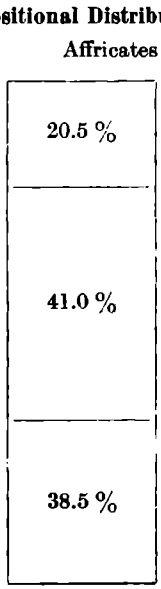

Figure 118

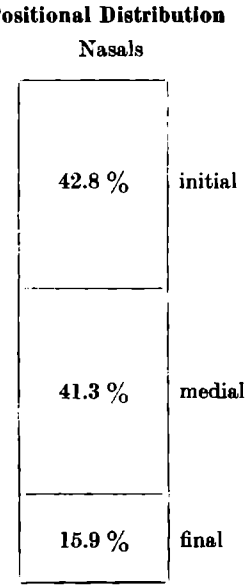

Figure 119

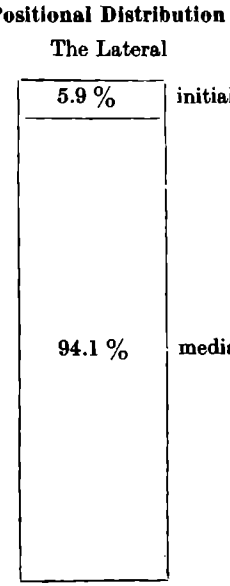

Figure 120

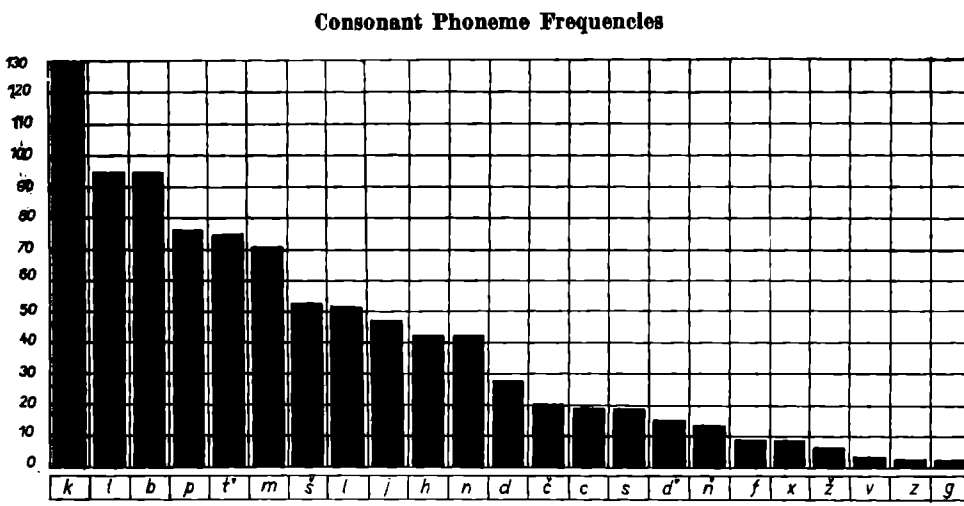

Figure 121

As in the first-fifty-word period, so too in the first-one-hundred-word period, the consonants are most widely distributed in the medial position, which accounts for more than half of the total consonant occurrences. The initial position follows. In spite of the fact that the consonants are not dropped as often as before word-finally, this position comes last in order of frequency. Figure 115 indicates the relative numbers of the three positions in consonants. A similar picture is revealed if we analyse

the stops, fricatives, affricates and the lateral separately. With the exception of nasals, where the initial position slightly predominates, the medial position is the leading one in all consonant categories and is followed by the initial. The final position is the least frequent in all cases. Their occurrences in the three positions are shown in Figures 116—120.

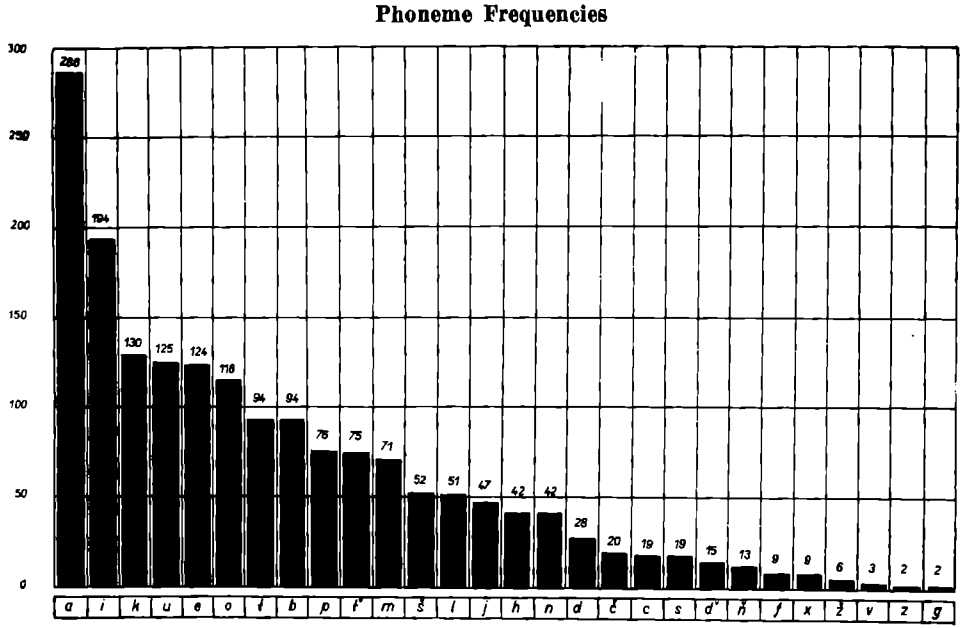

Figure 122

To summarize, we show all the consonants, arranged in order of frequency of occurrences, in Figure 121. In Figure 122 all of the child's phonemes found in the realizations of the first one hundred words are listed.

CONSONANTAL CLUSTERS

In distinction to the first developmental stage, where all consonantal clusters were simplified, 49 occurrences of two-member clusters were recorded in the realizations of the first one hundred words. Of them, 46 are word-medial, 3 word-final. No cluster has appeared word-initially at this stage of speech development.

As for the structure of the clusters, the following consonants meet in combination:

a stop + a stop	[*gb*], [*k'*]
a nasal + a stop	[*mb*], [*nt*], [*ŋk*], [*ň't*]
a nasal + a fricative	[*mh*]
a fricative + a stop	[*šk*], [*št*], [*š't*], [*lk*], [*wb*]

As to the frequency count, the pattern a fricative + a stop is the most widely distributed. The majority of this pattern is represented by the combination *š* + *k* and *š* + *t* and their high frequency is easily explicable on the ground of the child's predilection for diminutives, where both the clusters act as substitute for the Standard Czech [*čk*].

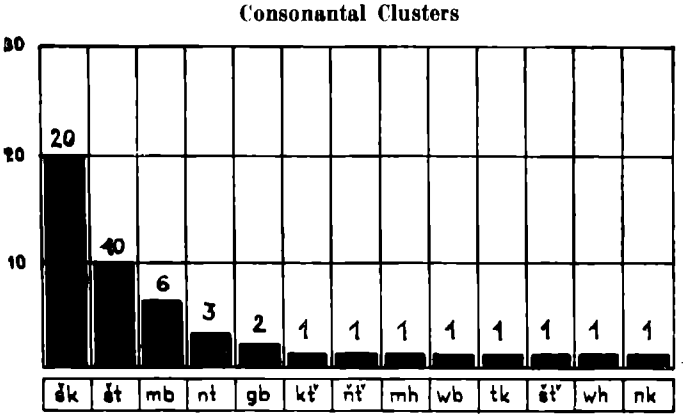

Figure 123

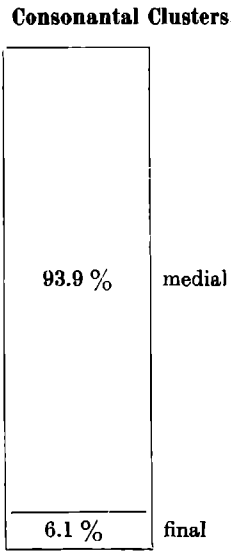

Figure 124

The remaining consonant combinations appeared in interjections and baby words and have arisen in the child's attempt to speak fluently. As most of the reported clusters have no correlates in Standard Czech, a comparison is hardly feasible.

Figures 123 and 124 indicate the cluster occurrences in the realizations of the first one hundred words and the ratio of the clusters realized in the medial and final positions.

PHONEMIC SHAPES OF WORDS

As in the first developmental stage, so too in this second one, there were monosyllables, disyllables, trisyllables and tetrasyllables in the child's vocabulary.

In order of syllabic length, the disyllables have by far the largest proportion, accounting for almost half of all word occurrences. Trisyllables come next and are followed by monosyllables and tetrasyllables. Figures 125 and 126 show the number of word occurrences and their proportions. Compared with the frequency scale of the phonemic length of words in the previous stage, only one change is shown. Due to the child's common usage of diminutives, trisyllables became more frequent than monosyllables.

In characterizing the phonemic shapes of words we have analysed their consonant and vowel sequences in Figures 127—130.

CV is the most frequent shape in all types of words except monosyllables, where the shape CVC predominates. 624 occurrences of CV shape in the realizations of the

first one hundred words account for 74.9% of the total number of syllables. Together with CVV and V shape the shape CV composes 80.6% of the open syllables as opposed to 19.4% of the closed ones. Compared to the findings in the first developmental stage, the number of the closed syllables is higher. Concomitantly, the ratio between vowels and consonants is changed. While in the previous period the vowels predominated, it is now the consonants which have achieved the majority making up 52.1% of the total of phonemes.

Phonemic Length of Words

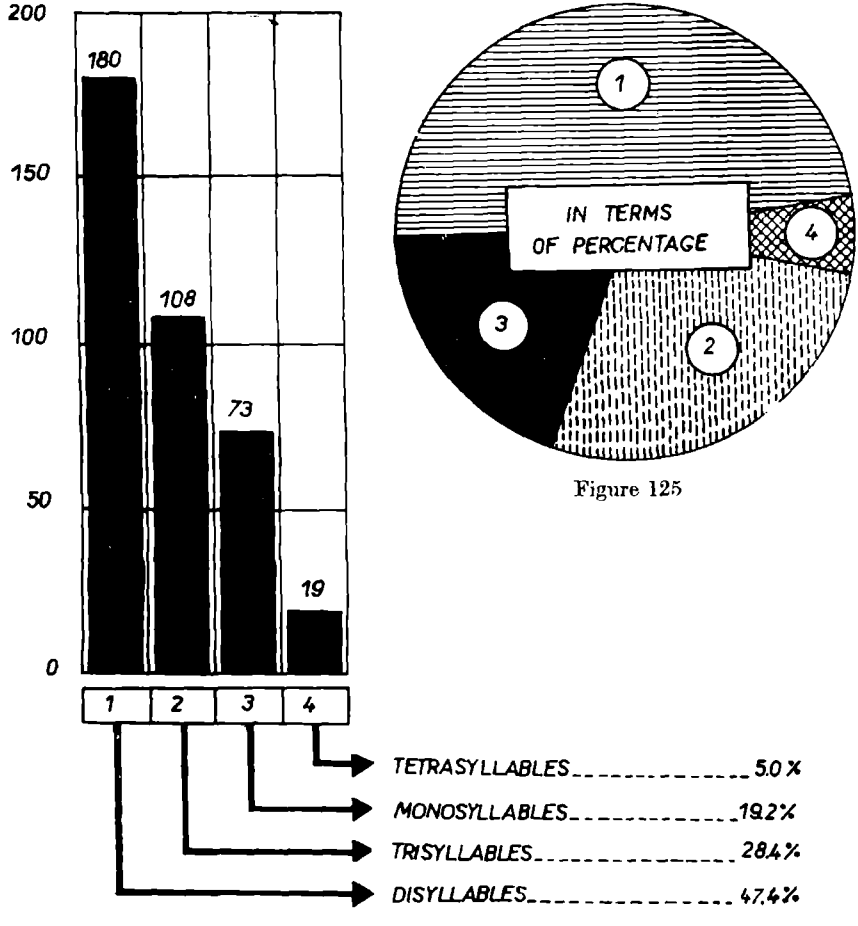

Figure 125

Figure 126

The following is a brief outline of the phonemic shapes in the various types of words:

In monosyllables, the shapes CVC, CV and CVV were recorded. Of them the shape CVC is the most frequent (49 occurrences). Another frequent shape is CV (23 occurrences). The shape CVV, on the other hand, occurred only once.

Phonemic Shapes in Monosyllabic Words

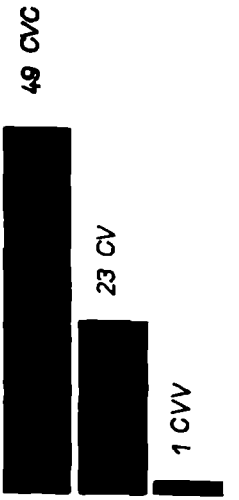

Figure 127

Phonemic Shapes in Disyllabic Words

Figure 128

Phonemic Shapes in Trisyllabic Words

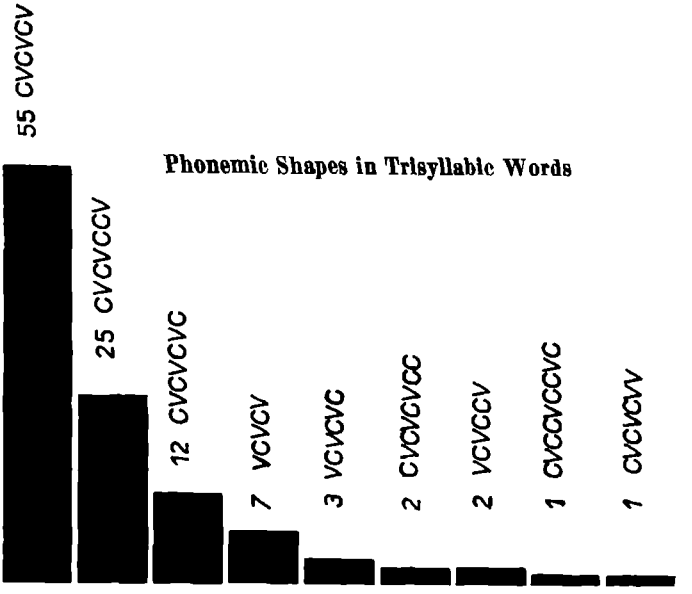

Figure 129

In disyllables the shape CVCV is by far the most widely distributed (101 occurrences). CVCVC and VCV are the next frequent patterns and have 31 and 19 occurrences respectively. With its 8 occurrences the shape CVCCVC comes fourth and the shape CVCCVC fifth in order of frequency. There follow VCVC with four, VVCV with three and VV with two occurrences. The remaining ninth, tenth, eleventh and twelfth places are occupied by the shapes VCCV, CVVC, CVCVCC and CVVCV, each of them having one occurrence.

Phonemic Shapes in Tetrasyllabic Words

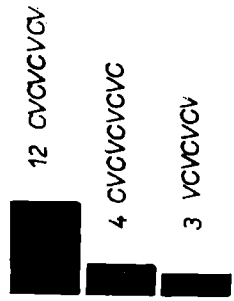

Figure 130

The trisyllables have the following shapes: CVCVCV (25 occurrences), CVCVCCV (25 occurrences) and CVCVCVC (12 occurrences). Besides these, the shapes VCVCV, VCVCVC, CVCVCVCC, VCVCCV, CVCVCVCC and CVCCVCCVC occurred and had the following occurrences: seven, three, two, two, one, one.

In tetrasyllables, the most frequent was the CVCVCVCV shape, which had 12 occurrences. Next in frequency is CVCVCVCVC with four and VCVCVCV with three occurrences.