

Pačesová, Jaroslava

## Phonology

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## PHONOLOGY

### VOWELS

The vowels which appeared in the realizations of the first fifty words are listed in the following table:

	Front	Central	Back
<b>High</b>	$\begin{matrix} /i/ \\ [i] [i:] [i:] [i::] \end{matrix}$		$\begin{matrix} /u/ \\ [u] [u:] [u:] [u::] \end{matrix}$
<b>Mid</b>	$\begin{matrix} /e/ \\ [e] [e:] [e:] [e::] \\ [e:] [\emptyset:] \end{matrix}$		$\begin{matrix} /o/ \\ [\emptyset] [\emptyset:] [\emptyset:] [\emptyset::] \\ [\emptyset:] [\emptyset:] [\emptyset] \end{matrix}$
<b>Low</b>		$\begin{matrix} /a/ \\ [a] [a:] [a:] [a::] \end{matrix}$	

Figure 1

A comparison of the vowel system of this period with that of Standard Czech points out these differences:

In distinction to Standard Czech we find a large number of phonetic variants in the child's speech; there are open and close vowels, labialization appears also with the front vowels and several examples of vowel reduction were observed. As for the quantity, four grades of length are to be noticed in this developmental stage: short, semi-long, long and extra-long. Phonetically, the child's vocalic system, compared to Standard Czech, is thus far more rich. Functionally, on the other hand, it is essentially reduced, as none of the sound differences mentioned above is used contrastively.

What follows will consist of the treatment of each vowel phoneme with its phonetic variants described phonetically and charted as to the number and place of occurrence. We cannot offer here the frequency of the phonemes founded on an analysis of the running text. The present work is based on word material registered in a detailed way as far as the phonetic realizations of each vowel and each consonant in the given developmental stage are concerned. Each occurrence is counted, except for phonetically identical realizations of the word and except for echo repetitions<sup>12</sup>.

<sup>12</sup> Echo repetitions are justly discussed separately in most findings on language development. Similarly, they are not counted in the statistics of R. Weir who in her study *Language in the*

## The Vowel /a/

### Phonetic Realization

It is frequently noted in observations on linguistic development that the vowel /a/ is one of the earliest sounds mastered by a child<sup>13</sup>. This observation is consistent with our findings as well. The phonetic realization of the vowel phoneme /a/ was mastered by the child investigated in the very first period of his linguistic development and reached the characteristics of a central low neutral vowel which is typical of Standard Czech<sup>14</sup>.

As for the quantity, four variants were noticed in the child's speech, namely short /a/, semi-long /a:/, long [a:] and extra-long [a::], all of them used promiscuously, thus indicating the instability of the feature of length.

### Distribution

The vowel /a/ is by far the most widely distributed one. With its 104 observed occurrences in the realizations of the first fifty words it constitutes 34.9% of the vocalic phonemes and 17.6% of all phonemes counted, ranking thus as the first phoneme in regard to frequency. In explaining this fact we are confronted with the question of whether vocabulary selection accounts for this or whether the vocabulary is selected in order to use this vowel phoneme as frequently. When analysing the fundamental stock of words in the first stages of linguistic development we see that most of the expressions are—to use Jakobson's terminology—"the nursery forms". They are adapted to the child's phonological system as well as to his creative ability and are used not only by the child but also by adults when addressing children. The most typical of them are the so called "parental terms"<sup>15</sup> *mama* and *papa* formed by means of an iteration of one and the same syllable whose bearer is the phoneme /a/. In view of Jakobson's theory of the development of the phonemic system in the child where the first dichotomy learned is that of consonant *versus* vowel, the consonant being a stop and the vowel being the low central /a/, the early establishment of this vowel phoneme as well as its frequent occurrence in our data might be confirmation of this theory.

Another explanation for the high frequency count of /a/ is its occurrence in interjections, a further category, typical for children's fundamental word stock in the early stages.

Besides the proper occurrences, the vowel phoneme /a/ functions as a substitutive sound for the diphthong [au]. When—as was an exception in this developmental stage—the realization of the sequence of two vowels took place, the vowel chain was then disyllabic.

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*Crib* gives a detailed analysis of phonological material based on pre-sleep monologues of a two-and-a-half-year old boy, cf. R. Hirsch Weir, op. cit., p. 32.

<sup>13</sup> On the question of stable realization of the vowel /a/ in children cf. K. Ohnesorg, *Fonet. studie I*, p. 16, *Fonet. studie II*, p. 15; cf. also R. Weir, *Language*, p. 39.

<sup>14</sup> A detailed description of phonetic realizations of Standard Czech vowels can be found in B. Hála's latest work, cf. *Uvedení*, p. 151—182.

<sup>15</sup> On the "parental terms" cf. R. Jakobson who in his study "Why Mamma and Papa" answers the question pronounced by Murdock in World Ethnographic Sample, *American Anthropologist* 59, p. 664—687. — cf. R. Jakobson, *Selected Writings*, p. 538—545; — An independent chapter "Mamma" and "Papa" is devoted to this phenomenon by O. Jespersen in his *Language, its Nature, Development and Origin*, see pp. 154—160.

As for the place of occurrence, the vowel phoneme /a/ is not restricted, being distributed word-initially, word-medially and word-finally; the most frequent in this developmental stage is the medial position of /a/, next in frequency is the final position of this vowel<sup>16</sup> while /a/ in the initial position is found least frequently. The proportional occurrences are shown in Figure 2.

The following are some examples of the occurrences of /a/ in the realizations of the first fifty words: [ano] *ano*, [a:to] *auto*, [ha:ta:] *hačá*, [ma:ja:] *malá*, [ba·] *bakanj*, [ta] *tam*.

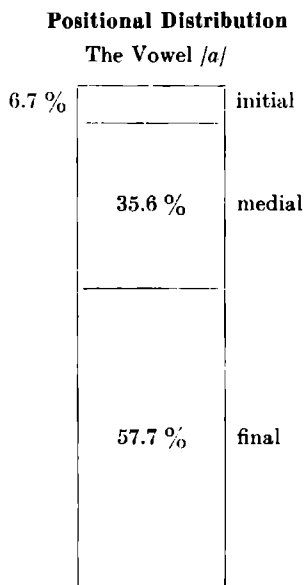


Figure 2

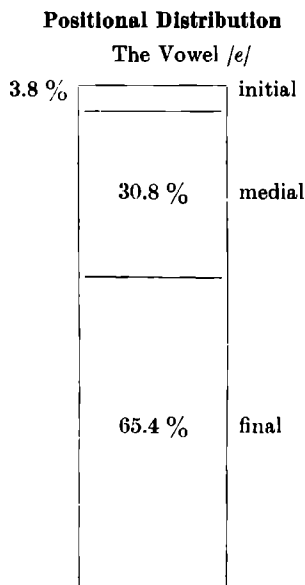


Figure 3

### The Vowel /e/

#### *Phonetic Realization*

This front mid unrounded vowel phoneme has five allophones at this stage of linguistic development, viz.

neutral short	[e]	e.g.	[ne·] <i>ne</i> , [ete] <i>ještě</i>
open short	[ɛ]	e.g.	[pešejo] <i>pršelo</i>
open long	[ɛ:]	e.g.	[me:mɛ] <i>mémé</i>
close long	[e:]	e.g.	[mɛ:mɛ::] <i>mémé</i> , [bɛ:bɛ::] <i>bébé</i>
rounded long	[ø:]	e.g.	[nø:] <i>ne</i>

<sup>16</sup> The high frequency count of final /a/ and similarly of other vocalic phonemes in this stage may be partially accounted for by the child's ignoring the final consonants and, concomitantly, his realizing the due medial vowels in the final positions.

The existence as well as the fluctuation of these allophones, most of them untypical of Standard Czech, shows the unstable phonetic realization of the vowel /e/<sup>17</sup>, underlined even by the fact that it was often replaced by another vocalic phoneme, namely /i/, cf. [d̥i:ti] *děti*, [bibi:] *bebé*. The most frequent allophone was the open [ɛ], both short and long. Such a sound may of course appear in emphatic speech in adults<sup>18</sup> and is therefore explainable in the child's speech, where emphasis is one of the most characteristic features. Emphasis plays, no doubt, a certain role in the use of the labialized [ø:]<sup>19</sup>. The main reason, however, for the existence of all the allophones of /e/ in the child is, in our opinion, the so-far unstable tongue position.

Side by side with the variable quality of this vowel phoneme is the instability of its quantity. Four variants were realized without utilizing the feature of short *versus* semi-long, long or extra-long contrastively.

#### *Distribution*

Contrary to the high frequency of /a/ the vowel phoneme /e/ is far less widespread. With a total of 26 occurrences in the first fifty words the vowel /e/ constitutes 8.7% of the vocalic phonemes and 4.4% of all phonemes counted. The low occurrence is due to the fact that /e/ in distinction to /a/ does not occur in the nursery forms and in the interjections its functional load is minimal<sup>20</sup>. Though unstable, the vowel /e/ acts as a substitute for the as yet missing syllabic [ɾ].

As for place, by far the greatest number of occurrences of this vowel phoneme are final, followed by medial; its occurrence in the initial position is, on the other hand, restricted to a single item [ete] *ještě* and is to be attributed to the imitation of the colloquial form [ešte]. Indicated in Figure 3 are the proportions of the occurrences of /e/.

### The Vowel /i/

#### *Phonetic Realization*

In view of the phonetic realization of the phoneme /i/ being by no means easy, in fact on the contrary, since due to the high position of the tongue as well as its tension it is considered very difficult, it is surprising to find relatively great stability of this vocalic phoneme in the first fifty words<sup>21</sup>. Guided by the general conception of the language learning process offered by Jakobson, however, we may see that in mastering the phonemes the most important factor is not their easy or difficult phonetic realization but the relation of the phoneme in question to the fundamental vowel /a/. The child learns to distinguish, actively and passively, low vowels from high vowels first, then the mid vowels and eventually the more refined subdivisions<sup>22</sup>. In the rela-

<sup>17</sup> Notes on unstable articulation of /e/ as well as its fluctuation with other vowels may be found also in Ohnesorg's *Fonet. studie I*, p. 16 and *Fonet. studie II*, p. 18; — Similarly, cf. R. Weir, *Language*, p. 35.

<sup>18</sup> Cf. B. Hála, *Uvedení*, p. 162.

<sup>19</sup> On the realization of [ø] in children cf. I. A. Sikorskij, *O razvitiyi rechi*, p. 99.

<sup>20</sup> Cf. J. Vachek, *Fonologie lexika*, p. 400.

<sup>21</sup> Ohnesorg, however, ranks the vowel /i/ as the last vocalic phoneme mastered by his children — cf. *Fonet. studie I*, p. 18, *Fonet. studie II*, p. 16. Both of them used an open allophone of /i/ which sometimes even fused with /e/. This is, no doubt, caused by the fact that in these children their linguistic development was influenced by the local variant of Prague Czech where the open allophone of /i/ is common.

<sup>22</sup> Cf. W. F. Leopold, *Patterning*, p. 14.

tion  $/a/$ — $/i/$  two maximal contrasts are represented, namely high *versus* low and broad *versus* narrow, both of them mastered by the child under observation in the very first speech period.

As for the quantity, what has been said in this connection about the vowel phoneme  $/a/$  and  $/e/$  holds good for the phoneme  $/i/$  as well; four allophones of  $/i/$  appeared in the boy's idiolect, none of them used contrastively.

### Distribution

With its 89 observed occurrences in the realizations of the first fifty words, the phoneme  $/i/$  constitutes 29.9% of the vocalic phonemes and 15.1% of all phonemes counted, ranking thus as the second most widely distributed phoneme in this period. As with the vowel  $/a/$ , the explanation for high frequency of the vowel  $/i/$  lies in its frequent occurrence both in the nursery forms (cf. e.g. [čiči:] *čiči*, [haji:] *hají*, [hači:] *hači*, [houpi] *houpy*, [pipi] *pipi*) and in the interjections (various realizations of *kykyryký*—a commonly used Czech interjection for a cock crowing—, *hijá*—used as an encouragement for a horse—, *iktak*—an interjection representing the sound of a clock). A considerable number of occurrences of the vowel phoneme  $/i/$  is due to the fact that the child's name is *Jiří*. The fact that he was often addressed in this way and, in speaking of himself, actively imitated various forms of this name (cf. [iži:] , [ika], [jika], [iži:te], [iži:če], *Jiří*, *Jirka*, *Jiriček*) contributed no doubt both to the early stabilization and to the high frequency count of this vocalic phoneme. Beside this the vowel  $/i/$  was properly used in the vocative case [mami] *mami!* [tati] *tati!* [babi] *babi!* These forms were then analogously used in the nominative as well where they took the place of the proper forms [ma:ma] *máma*. [ta:ta] *táta*, [ba:ba] *bába*.

#### Positional Distribution

The Vowel  $/i/$

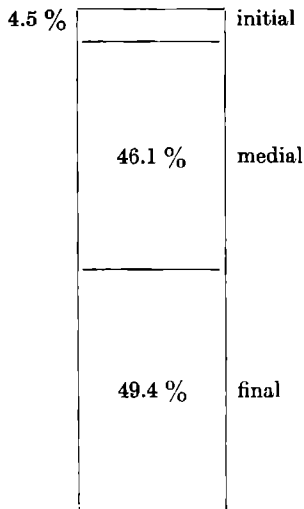


Figure 4

As for the place of occurrence, the phoneme  $/i/$  is not restricted and occurs in initial, medial and final position. The distribution in these positions, however, greatly differs. 4.5% of the occurrences of initial  $/i/$  are to be explained by the fact that the child in this developmental stage used to drop the initial consonant—cf. [iži:] *Jiří*, [iži:te] *Jiriček*, [ika] *Jirka*, [iti] *děti*. In the example [iti] the phoneme  $/i/$  represents the substitute of the phoneme  $/e/$ —cf. the proper form [děti]. In the medial position  $/i/$  is used properly in most of the cases. Once again, however, we may find examples where it takes place of other vocalic phonemes, namely  $/e/$ —cf. [diti] *děti*, [bibi:] *bebé*. A partial explanation for this may be a distant assimilation, supported by the fact that the phonetic realization of the substituted  $/e/$  is as yet very unstable. The highest occurrence of the phoneme  $/i/$  is in its final position. Side by side with the proper realizations here [dēti] *děti*, [puši:] *prší*, [jži:] *Jiří*, [mami] *mami*, [tati] *tati* etc. there are many forms where the distribution of the final  $/i/$  is either proper, cf. [čiči:], [pipi], [houpi] or analogous, cf. [hači:], [haji:], [hami:], [baji:].

Figure 4 indicates the proportionate occurrences of the phoneme  $/i/$ .

## The Vowel /o/

### Phonetic Realization

As with the front mid unrounded vocalic phoneme /e/, so too the phonetic realization of the back mid rounded phoneme /o/ is not stable and fluctuates in these allophones:

open short	[ɔ]	e.g. [a:tɔ] <i>auto</i>
close short	[ɔ̄]	e.g. [kokokɔda:] <i>kokokodák</i>
open long	[ɔ:]	e.g. [anɔ:] <i>ano</i>
close long	[ɔ̄:]	e.g. [hɔ̄:pi] <i>houpy</i> , [nosonɔ̄:] <i>na shledanou</i>
strongly rounded	[ɔ̄:]	e.g. [tɔ̄::to] <i>toto</i>
reduced	[ə]	e.g. [tətətəda:] <i>kokokodák</i> .

The most frequent allophone was the open [ɔ], the phonetic realization of which was very near to [a]. Once again we may mention here the emphatic speech where delabialization and realizations of open allophones are typical both with adults and even more so with the child who has not yet mastered the coordinate movements of the speech organs<sup>23</sup>. The close allophone [ɔ̄], on the other hand, occurred especially in the interjection *kokokodák*. In this expression a qualitative reduction, unknown in Standard Czech, appeared, the close [ɔ̄] being then replaced by [ə]. The rapid pronunciation, the syllabic length of the word<sup>24</sup> and the child's effort to produce in the best way the sounds that resemble those associated with the object to be named might be a plausible explanation for using either the close or reduced allophone of the phoneme /o/.

Also the quantity of the vowel /o/ is unstable. A short allophone fluctuates with the long one and the long allophones are—especially in the final position—emphatically lengthened. As for the quality of the long [ɔ:], both the open and close variant appeared, the close one being used in most of the cases as a substitution of the diphthong [ou]<sup>25</sup>, cf. [hɔ̄:pi] *houpy*, [nosonɔ̄:] *na shledanou*.

### Distribution

With its 25 observed occurrences in the realizations of the first fifty words, the vowel /o/ constitutes 8.4% of the vocalic phonemes and 4.2% of all phonemes counted, ranking thus as the least frequently distributed vocalic phoneme in this period. The low figures are to be explained by the fact that /o/—similarly as /e/—does not appear in the nursery forms and its occurrence in onomatopoeia is restricted to a single item, viz. *kokokodák*<sup>26</sup>.

<sup>23</sup> Our findings on the unstable phonetic realization of /o/ coincide with Ohnesorg's observations. He also mentions the open, close, labialized and reduced variants of this phoneme in the child's speech, cf. *Fonet. studie II*, p. 17.

<sup>24</sup> Interjections, especially those of onomatopoeic character, were the sole tetrasyllables and were—unlike the other words—pronounced as polysyllables without undue pauses between the syllables.

<sup>25</sup> R. Weir (cf. *Language*, p. 38, 39) mentions two allophones of the phoneme /o/, viz. the mid back tense rounded [o] and the mid back tense unrounded [ɔ], disregarding the functional use of this feature. Both occurred in all the positions and took the place also of the diphthong [ou]. — Though we are fully aware of the different phonological systems of English and Czech, it is rather interesting that fluctuation between open and close allophones as well as the monophthongized realization of the diphthong does occur with the English- as well as with the Czech-speaking child, at a certain stage of his linguistic development.

<sup>26</sup> Cf. with the frequency counts of J. Vachek (*Fonologie lexika*, p. 400) where in onomatopoeia /o/ is the least distributed phoneme.

As for the positional occurrence, the vocalic phoneme /o/ appears in the initial, medial and final positions. Its distribution here is, however, highly unequal. The sole example of the initial /o/ is caused by the fact that the proper initial consonant was dropped (cf. [o:pi] *houpy*). Medially, the phoneme /o/ occurs most often. Its distribution in this position is, in most cases, correct. The existence of this vowel in the distorted form [nosono:] *na shledanou* is due to the tendency to equalize all the vowels in the word rather than to the change of /a/ > /o/ in the first syllable and /e/ > /o/ in the second one. No other case of a similar substitution was registered. In this expression—the considerable disfiguration of which was no doubt caused by the syllabic length of the word—two phonetic changes took place, both of them typical of this developmental stage, viz. *haplology* and—as the result of the operation of the distant regressive assimilation—*vocalic harmony*. The relatively high frequency count of the vowel /o/ in the final position is to be explained by frequent usage of the boy's favourite expressions *auto* and *ano*.

Figure 5 gives the proportions of the distribution of this vocalic phoneme in the realizations of the first fifty words.

### The Vowel /u/

#### Phonetic Realization

The phoneme /u/ was articulated by the child as a high back rounded vowel with no outstanding deviation as compared to Standard pronunciation<sup>27</sup>. To explain the early fixation of this high back vowel phoneme we cannot but repeat what has been said about the high front phoneme /i/. The most important factor in acquiring the vowel phonemes is their relation to the fundamental phoneme /a/. As with the relation /a/—/i/, so too the relation /a/—/u/ represents the maximal contrast low *versus* high, which was mastered by the child in his very first linguistic period.

The early stabilization of the phonetic realization of /u/ with the child investigated speaks for Jakobson's theory of minimal vocalism as well as his placing of /u/ among those phonemes that constitute the early vocalic contrasts<sup>28</sup>.

The quantity of /u/ is unstable. Alongside the short [u] the semilong, long and emphatically lengthened variants occur, none of them, however, having phonemic value.

Positional Distribution  
The Vowel /o/

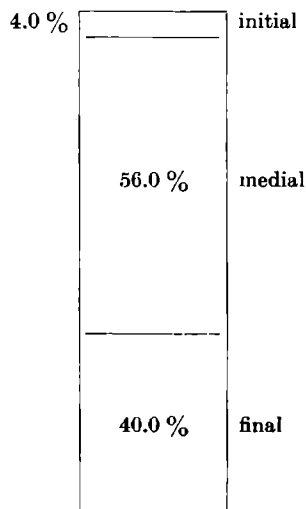


Figure 5

<sup>27</sup> Cf. Ohnesorg (*Fonet. studie I*, p. 17), who describes the pronunciation of this vowel as "normally articulated" in the idiolects of his son with the exception of more closed and more labialized variants in the interjections. — Only two variants are noticed by R. Weir (*Language*, p. 37): the high back tense rounded [u] and the high back lax rounded [u], the feature of tense *versus* lax not being used contrastively.

<sup>28</sup> The first two vocalic contrasts are — in Jakobson's opinion — the contrast wide *versus* narrow (cf. *papa* — *pipi*) and the contrast palatal *versus* velar (cf. *pipi* — *pupu*) — see R. Jakobson, *Kindersprache*, p. 358. — Cf. also with M. Pavlović, *Le language*, p. 44.



## Distribution

The vowel /u/ ranks as the third most-frequently used vocalic phoneme. With its 54 occurrences in the realizations of the first fifty words it constitutes 18.1% of the vocalic phonemes and 9.2% of all phonemes counted. This relatively high frequency count of /u/ is to be expected in view of its being often distributed in the interjections which create the largest part of the child's fundamental word stock in this period and where this vocalic phoneme is the leading one<sup>29</sup>. Besides its proper occurrences, the phoneme /u/ functions—in fluctuation with /e/—as a substitution of the syllabic variant of /r/ (e.g. [pušet] *pršet*, [puši:] *prši*, [pešejo] *pršelo*); some instances of its occurrence are due to phonetic changes, namely the regressive assimilation, cf. [pupuče], [pupu'e] *papuče*.

As for the place of occurrence, the vowel /u/ is distributed in the medial and final position while its occurrence in the initial position has not been recorded in this period. The proportions of the two existing positions are shown in Figure 6. The following are some examples of the occurrences of /u/ in the realizations of the first fifty words: [bum] *bum*, [tuť] *kluk*, [hu:hu:] *húhú*, [bu:bu:] *búbú*, [mu·] *muk*, [papu:] *papú*, [ňau] *mňau*, [autq] *auto*.

## Summary

In summarizing the findings on vowels realized in the first fifty words these conclusions may be drawn:

The child mastered well the phonetic realization of the phonemes /a/, /i/ and /u/. With the exception of the quantity their articulation was fairly stable, they were used in proper positions, were not replaced by other vowels, on the other hand, they themselves functioned as substitutive sounds for some other phonemes whose phonetic realization had not yet been correctly acquired, i.e. /e/ and /o/ or which were still missing in the child's phonemic system, i.e. /r/.

The length of all vocalic phonemes is unstable as yet. Short, semi-long and long vowels freely fluctuated. Their emphatical lengthening was recorded in the final positions mostly in onomatopoeia but, analogously, in other expressions as well<sup>30</sup>. There were also examples where the gemination of two identical vowels took the place of the proper long vowel phoneme.

The realization of the diphthongs is far from being fixed. The vowel chain is either monophthongized or pronounced disyllabically.

As far as the distribution is concerned, all vocalic phonemes found in the data are listed in Figure 7., arranged in order of frequency of occurrence. Figure 8 shows their proportional occurrences. The striking preponderance of the distribution of /a/ in the baby talk is all the higher, the smaller the number of the words analysed. To illustrate this we add the number of occurrences of the vocalic phonemes in the first ten words: /a/ 23, /u/ 11, /i/ 8, /e/ 2, /o/ 3. In terms of percentage, /a/ makes up almost 50% of the

<sup>29</sup> Cf. J. Vachek's statistical countings in interjections and emotional words; see *Fonologie lexika*, p. 400).

<sup>30</sup> Cf. J. Pícka, *Řeč s dětmi*, p. 509, where the author offers an explanation for the lengthening of the final syllables in children on the basis of the speech tempo which decreases gradually. — On the lengthening of the vowels before terminal disjunctions see the latest monography of H. Kučera, *Phonology of Czech*, p. 27. — The different ratios of relative duration of short and long vowels in various positions in the utterance are described in detail in J. Chlumský, *Česká kvantita, melodie a přízvuk*.

vocalic phonemes, not to mention the fact that the three occurrences of /o/ had such an open quality and weak rounding that we might consider it an allophone of /a/. Similarly, the two occurrences of /e/, viz. closed [e:] and labialized [ø:] could have been treated as allophones of /i/ and /u/ respectively, due to their very close and strongly rounded character.

**Positional Distribution**  
The Vowel /u/

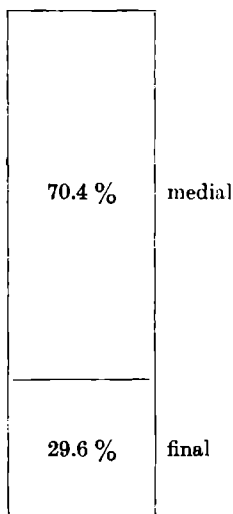


Figure 6

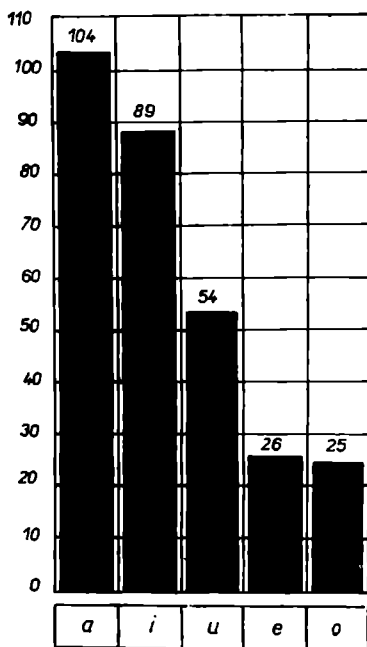


Figure 7

**Vowel Phoneme Proportions**

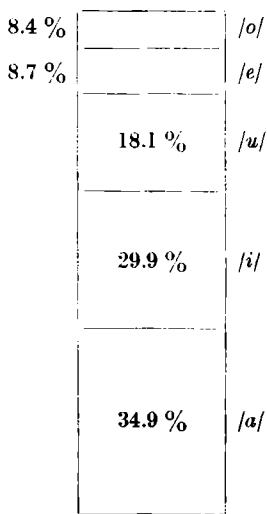


Figure 8

A comparison of the distribution of the vowel phonemes in the child's idiolect with the statistical findings of Standard Czech as given by J. Vachek, V. Mazlová, B. Hála and H. Kučera<sup>31</sup> is rather interesting. J. Vachek follows the number of occurrences of vocalic phonemes in the most frequent types of Czech, i.e. CVCVC and CVCCV. In his conclusions the most widely distributed vowel phoneme here is /e/, followed by /o/ and /a/. If however, we count the short vowels together with their long counterparts which are—as autonomous phonemes—in Standard Czech naturally counted separately, the pair /a/ + /a:/ has the highest functional load and is followed by the pair /i/ + /i:/.

With V. Mazlová, B. Hála and H. Kučera we find this order of vowels even if we treat short and long vowels under one and the same heading: /e/ — /i/ — /a/ — /o/ — /u/. The order in our data is the following: /a/ — /i/ — /u/ — /e/ — /o/.

<sup>31</sup> Cf. J. Vachek, *Fonologie lexika*, p. 400 ff.; V. Mazlová, *Zvuková stránka češtiny*, pp. 101—111 and 146—151; B. Hála, *Uvedení*, p. 383; H. Kučera, *Phonology*, p. 42. — Cf. also the latest study *Kvantitativní vlastnosti soustavy českých fonémů* in SaS 4, 1966, where the authors M. Ludvíková and J. Kraus more or less confirm the results arrived at by Mazlová and Kučera.

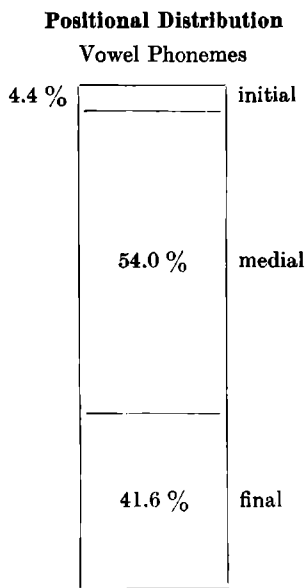


Figure 9

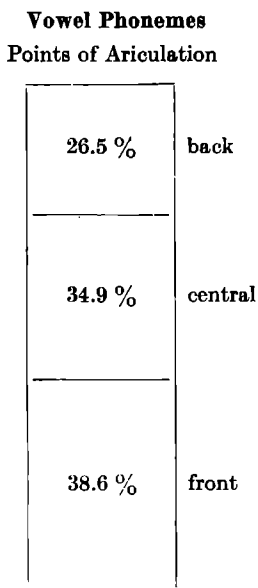


Figure 10

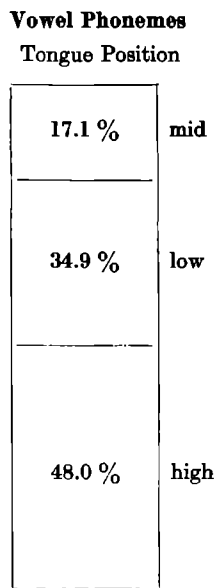


Figure 11

The priority of the vowels */a/*, */i/*, */u/* as compared to */e/* and */o/* in the first developmental stage of the child investigated, and similarly in the data of R. Weir (op. cit. p. 43) and R. Burling (op. cit. p. 46), is to be explained by the selection of the child vocabulary. The baby talk used by both the children and the grown-ups in their mutual intercourse, consists mostly of nursery forms and interjections that are deliberately adapted to the child's phonemic pattern and to the usual make up of his early words, distributing therefore in the first place those vowels the child masters first.<sup>32</sup>

As for the place of occurrence of the vocalic phonemes, most of them were recorded in the medial positions both in the separate counts and in the summary. Next in frequency is the final position, while the initial is almost exceptional, as may be seen in Figure 9.

When analysing the distinctive features in vowels in the child's first developmental stage, the contrasts wide *versus* narrow, front *versus* back and high *versus* low were fully acknowledged. The contrasts of high *versus* mid and low *versus* mid are still unstable. In Figures 10 and 11 the proportions of the existing distinctions are shown. In regard to quantity, the distinction of short *versus* long has not been learned in its contrastive function.—Some additional features were registered with the child in spite of the fact that they do not exist in Standard Czech.<sup>33</sup> Of these we mention here

<sup>32</sup> The preponderance of the vowels */a/* — */i/* — */u/* in our data bears further evidence to Jakobson's theses on minimal vocalism and on the first vocalic split opposing the single compact */a/* to the diffuse and grave */u/* and the diffuse and acute */i/*, cf. R. Jakobson, *Kindersprache*, p. 358.

<sup>33</sup> Examples demonstrating the existence of features unknown in the mother tongue are observed also with other investigators, both Czech and foreign, e.g. K. Ohnesorg, A. Grégoire, R. Jakobson, M. Cohen etc.

open *versus* close (all Czech vowels are neutral) and rounded *versus* unrounded, applied with the front vowels (only back vowels are rounded in Czech while all front and central are always unrounded).

## CONSONANTS

As the table below indicates, the child has these consonantal phonemes and allophones in the realizations of the first fifty words:

	Labials		Alveolars		Palatals	Velo-glottals	
	bilabials	labio-dentals	prae-alveolars	post-alveolars		velars	laryngeal
Stops	$p$ [ $ph$ ] $b$		$t$ $d$		$\check{t}$ [ $t'$ ] $\check{d}$	$k$	
Nasals	$m$		$n$		$\check{n}$ [ $n'$ ]	—	
Affricates			$c$ —	$\check{c}$ —	[ $c'$ ] [ $\check{c}'$ ]		
Fricatives	[ $\varphi$ ] —	$f$ —	$s$ —	$\check{s}$ $\check{z}$	[ $s'$ ] [ $\check{s}'$ ] $j$	$x$	$h$
Laterals			$l$		[ $l'$ ]		
Vibrants			—	—			

Figure 12

### The Plosive Consonants

The child's consonantal system of this period has voiceless and voiced stops at the bilabial, alveolar and velar points of articulation, i.e. [ $p$ ], [ $b$ ], [ $t$ ], [ $d$ ], [ $t'$ ], [ $\check{d}$ ], [ $k$ ]. Comparison with the consonants of Standard Czech shows that the child's system contains all the stops except the velar [ $g$ ] which is missing so far. As will be shown later on, not all of these stops are mastered equally well in this developmental stage. While the voiceless stops are fairly stable and just a few deviations from their correct phonetic realizations were registered, the voiced stops exhibit considerable instability and fluctuate with their voiceless counterparts.

### The Nasal Consonants

In accordance with Standard Czech the child has the nasals at the bilabial, alveolar and palatal points of articulation, i.e. [ $m$ ], [ $n$ ] and [ $\check{n}$ ], all of them having the status of autonomous phonemes. Still missing in the child's idiolect is the velar allophone of the phoneme [ $n$ ].

## The Affricate Consonants

Both Czech affricates /c/ and /č/ appeared in the vocabulary consisting of the first fifty words. Because of their unstable phonetic realization and only exceptional distribution they cannot be treated as fully mastered phonemes. Their voiced allophones did not occur in this period.

## The Fricative Consonants

What has been said about the affricates, holds good of the fricatives. With the exception of the palatal /j/, the fricative articulation has not yet been learned by the child at this stage of speech development. So far as any fricative appeared, its point of articulation was very unstable and it was, in nearly all cases, voiceless.

## The Lateral Consonants

Neither the phonetic realization nor the distribution of the sole Czech lateral /l/ is stable in the child's idiolect in this period. In all word-categories except in interjections, it fluctuates with the palatal fricative /j/.

## The Trilled Consonants

Neither of the two representatives of this group in Standard Czech, i.e. /r/ and /ř/ appeared in the realizations of the first fifty words.

To summarize we have to state that of the 25 Czech consonantal phonemes the child has mastered but 7. As in vowels, so too in consonants, the treatment of each phoneme will include a brief discussion of the following topics: the phonetic realization, with comments on allophones, the distribution of each of the consonantal phonemes and its eventual alternation with other phonemes.

## THE PLOSIVE CONSONANTS

### The Plosive /p/

#### *Phonetic Realization*

This voiceless bilabial stop phoneme had a stable realization in the very first words of the boy under observation and may be therefore considered as a perfectly mastered consonant<sup>34</sup>. In a few instances an aspirated allophone of /p/ was registered.

#### *Distribution*

The stop phoneme /p/ comes first in the frequency scale of consonants<sup>35</sup>. Its 37 occurrences in the realizations of the first fifty words amount to 17.6% of the stop

<sup>34</sup> The correct pronunciation of the bilabial stop is observed also by K. Ohnesorg, cf. *Fonet. studie I*, p. 23, *Fonet. studie II*, p. 22; — Similarly in L. Bartoš, cf. *Observations*, p. 6 and in R. Weir, cf. *Language in the Crib*, p. 44.

For a detailed phonetic description of Czech consonants see B. Hála, *Uvedení*, pp. 220—260.

<sup>35</sup> When we compare the high frequency count of the bilabial stop phoneme /p/ in the child's speech with its distribution in Standard Czech, a great difference is to be seen. While in the first developmental stage /p/ ranks as the first among the consonantal phonemes, it is found tenth in

phonemes, 12.7% of the consonantal phonemes and 6.3% of all phonemes counted. The most plausible explanation for the high frequency count of /p/ is in its frequent distribution in nursery forms and in interjections, cf. [pa:pa:] *pápá*, [papa:] *papá*, [papu:] *papí*, [hapa:] *hapá*, [hɔ:pi] *houpy*, [pipi] *pipi* etc. Because the distinction of voice has not been learned well at this stage, the voiceless /p/ very often functions as a substitution for its voiced counterpart /b/, thus increasing its distributional field, cf. [pa:ba] *bába*, [pabi:] *babí*!, [pu:bu:] *búbú*, [pibi:], [pipi:] *bébé*<sup>36</sup>. In one example, /p/ takes the place of the labiodental fricative /f/, whose articulation has not yet been acquired by the child properly as far as its fricativity is concerned, cf. [hap] *haf*<sup>37</sup>.

As for the positional occurrence, the phoneme /p/ is not limited, being distributed word-initially, word-medially and word-finally. The greater number of occurrences are initial, followed by medial, while the final position has the lowest percentage—a phenomenon which might be stated generally of all consonantal phonemes of this period. Figure 13 shows the proportions of the three positions.

In the paragraph on the phonetic realization of /p/, we have mentioned the existence of the aspirated allophone of this phoneme. The nursery farewell *pápá* was pronounced as [p<sup>h</sup>a:p<sup>h</sup>a:] while the third person singular of the nursery form *papat* as [papa:]. Another homophone, [pa:pa] *bába*, existed due to the disregard of the feature of voice and of the feature of length. Similarly, alongside the onomatopoeic [p<sup>h</sup>ip<sup>h</sup>i], the boy knew and used the forms [bibi:], [pibi:], [pipi:] *bébé*. The question might arise here as to whether the aspiration was not used in order to help in differentiating the phonemes /p/ and /b/ in the period where the contrast voiceless *versus* voiced has not yet been stabilized and where the quantity has not yet been used in its contrastive function<sup>38</sup>.—There is, however, another possible explanation for the appearance of the aspirated allophone of /p/: the aspiration could have been applied as a means of expressing emotional stress<sup>39</sup>.

### Positional Distribution

The Plosive /p/

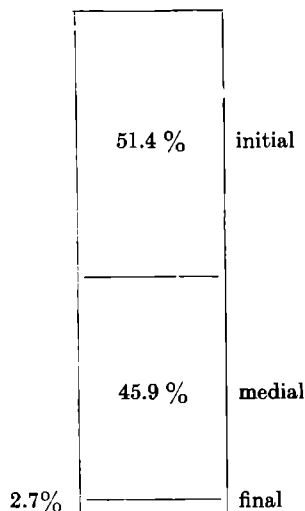


Figure 13

the statistics of V. Mazlová and ninth in that of H. Kučera. — As for the initial position in the most frequent types in Czech, i.e. CVCVC and CVCCV, J. Vachek finds the phoneme /p/ the most widely distributed. Also in the emotional words the functional load of /p/ is very high.

<sup>36</sup> Confusion between voiceless and voiced consonants with children has been noticed by most of the investigators in this field. As this confusion is not typical only of the bilabials but is common to all stop phonemes, we shall deal with it synthetically in the summary.

<sup>37</sup> Like the confusion between voiced and voiceless counterparts, so too the confusion between stops and fricatives is not rare with children as will be shown in the conclusions on consonants.

<sup>38</sup> Cf. G. P. Torsuev who in his monograph on English phonetics suggests that it is the aspiration which is to be considered the most important characteristic of the voiceless stops /p/, /t/, /k/. He maintains that to the English ear the non-aspirated stops /p/, /t/, /k/ differ very little from their voiced counterparts /b/, /d/, /g/, and may therefore fail to be distinguished from them. It follows that besides the fundamental distinction between /p/, /t/, /k/ and /b/, /d/, /g/ consisting in the contrast of voiceless-*fortis* and voiced-*lenis*, aspiration tends to be of great importance for it helps to tell /p/, /t/, /k/ from /b/, /d/, /g/ — cf. Torsuev, *Obuchenie*, p. 110.

<sup>39</sup> On the question regarding the means of expressing emotional stress cf. V. Machek, *Studie*, p. 5.

The stable character of the phoneme /p/ as well as its frequent occurrence in the first words of a child is common to most observations of baby talk. To explain why bilabials appear in early stages of speech development and precede the velars in their stabilization, the relation between labial articulation and sucking activity and the strong visual support with the labials are offered. Neither the hypothesis regarding sucking nor the visual support suggests, however, the solution of why the child is able to differentiate between /m/ and /p/ when the difference is not visible and hardly has any importance in sucking activity. Last but not least we cannot but mention the opinion that in the babbling period, i.e. the period most closely connected with sucking, the child produces the velar sounds more often than the labial ones<sup>40</sup>.

To explain satisfactorily the early stability and the high functional load of /p/, once again the law of maximal contrasts, pronounced by R. Jakobson<sup>41</sup>, should be repeated here. It has been said in the analysis of the vocalic repertory that the child mastered comparatively soon the phonetically difficult vowel /i/ because it builds up the vocalic contrast to the fundamental vowel /a/. When viewing the acquirement and the development of the phonemes in a complex way, /p/ does undoubtedly belong among those phonemes which create the early maximal contrasts, being the optimal close counterpart to the optimal open vowel.

## The Plosive /b/

### *Phonetic Realization*

As with the phoneme /p/, the phonetic realization of /b/ was well mastered by the child in regard to point and manner of articulation<sup>42</sup>. Its voiced character, however, is unstable, showing that the distinction of voice is not yet acknowledged in this first developmental stage, thus again supporting the observation that the marked features are as a rule acquired later than the unmarked ones. The data illustrating the unstable character of the voiced consonants as well as the fact that the child is satisfied with the realizations of the voiceless consonants in his first words are to be found in most children—not only Czech but of other nationality as well. References to this phenomenon will be made in the conclusions of the chapter on the plosive consonants.

### *Distribution*

In view of what has been said on the unstable character of the feature of voicing we might expect the low distribution of /b/. Surprisingly, its 30 observed occurrences in the realizations of the first fifty words ranks this voiced bilabial stop as the fifth highest consonantal phoneme with regard to frequency. In percentage, it accounts for 14.3% of the stop phonemes, 10.3% of the consonantal phonemes and 5.1% of all phonemes counted<sup>43</sup>. With these figures its predominance among the voiced stops is

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<sup>40</sup> Cf. e.g. V. Příhoda, *Ontogeneze*, p. 133—134; similarly, Irwin, *Phonetical Description* in L. Kaiser, *Manual of Phonetics*, cf. p. 403 ff.

<sup>41</sup> On the question of the development of the phonological contrasts see R. Jakobson, *Kindersprache*, p. 375.

<sup>42</sup> The stable phonetic realization of /b/ is observed by Ohnesorg and Bartoš. Both these authors, however, deal with all voiceless and voiced counterparts under one heading. As the differences in the first developmental stages with regard to the phonetic realization and the distribution of the voiceless and the voiced consonants is rather heavy, we preferred to describe each consonant phoneme separately.

<sup>43</sup> Contrary to the child's speech, /b/ does not belong to widely distributed phonemes in Czech, cf. its 14th place in the frequency scale of Mazlová and the 16th in Kučera. Also Vachek's observations show the low functional load of /b/ with the exception of the onomatopoeic words where in the initial position of the quoted types it ranks as the third most widely distributed consonantal phoneme.

striking, cf. 30 occurrences of /b/ with 6 occurrences of /d/, one occurrence of /ď/ and 0 occurrence of /g/. To explain this discrepancy we must again take into consideration the phonemic repertory in nursery forms, where /b/ is widely distributed as it is in interjections, especially in those of onomatopoeic character, cf. e.g. [ba:ba], [babi:], [bak], [bebe:], [bibi:], [bum], [ba:c], [bububu], [bu:bu:], [be:be:], [bØ:bØ:] etc.

As for the positional occurrence, the phoneme /b/ is—like all voiced paired consonantal phonemes in Standard Czech—restricted to the initial and medial position. Its occurrence in the final position is impossible because the neutralization of the feature of voicing typical of Czech takes place word-finally. The child imitates this neutralization perfectly and no exception to this rule was recorded in his speech development. The frequency count of the remaining two positions show, as with most of the consonantal phonemes in this period, higher numbers for the initial position. Figure 14 indicates the proportion of the positional occurrences of /b/.

#### Positional Distribution

The Plosive /b/

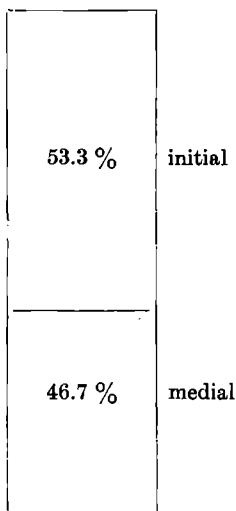


Figure 14

#### Positional Distribution<sup>1</sup>

The Plosive /t/

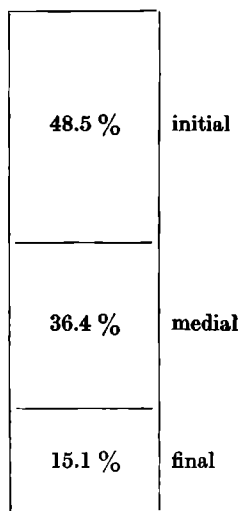


Figure 15

### The Plosive /t/

#### Phonetic Realization

Like /p/, /t/ may also be justly considered as one of the consonantal phonemes whose phonetic realization was mastered in the first-fifty-word period. With minor exceptions regarding the point of articulation, the phoneme /t/ was fairly stable<sup>44</sup>.

<sup>44</sup> Disregarding the palatalization, /t/ is considered to belong to the consonants which are acquired early by the children. To illustrate this the examples of Ohnesorg (*Fonet. studie I*, p. 23, *Fonet. studie II*, p. 23), Bartoš (*Observations*, p. 7); Burling (*Language Development*, p. 42) may be quoted. — The early acquirement of this phoneme is taken for granted by Jakobson when he proclaims the consonants /p/ — /t/ — /k/ as the main coordinates of the phonemic system, cf. *Kindersprache*, p. 379.



The phoneme /t/ comes second in the frequency scale of consonants<sup>45</sup>. Its 33 occurrences in the realizations of the first fifty words amount to 15.7% of the stop phonemes, 11.3% of the consonantal phonemes and 5.3% of all phonemes counted. As for the character of the words in which this phoneme is used most frequently, interjections once again show their predominance, though other word categories are not excluded. In most cases, /t/ is used properly. Not exceptional are, however, examples where this voiceless alveolar phoneme performs the function of a substitute for some other phonemes whose phonetic realization has not yet been mastered perfectly, e.g. /k/ or /d/. The following are some instances; [tudu:] *tudú*, [tidi:] *tydí*, [tadi] *tady*, [ta:ta] *táta*, [tati] *tati!*; [tati] *tady*, [tu:tu:] *tudú*, [mut] *muk*, [tototoda:] *kokokodák*, [tutululu:] *kutululú*.

The palatalized allophone [t'] appeared in the parental term *táta* and had the function of a strongly emotional variant introduced in such cases when the child was demanding the fulfilment of some of his desires.

The interjection *triktak* was imitated by the child firstly as [cíta] or [cíta']. Only in his later attempts the form of the common interpretation [tiktak] was successful.

As to the positional occurrence, the phoneme /t/ is not limited and is found word-initially, word-medially and word-finally. The more frequent positions are the initial, followed by medial. Its occurrence in the final position is—as is common to all consonantal phonemes in this period—considerably lower. Figure 15 shows the proportions of its distribution.

The palatalization of the alveolar stops (of these /t/ is the most often affected) appears at a certain developmental stage, perhaps with every child, and the palatalized allophones are usually maintained even in later stages, when the phonetic realization of both alveolar and palatal stops is no doubt perfectly acknowledged as regards the point of articulation. Nearly all investigators notice the feature of palatalization regardless of whether this feature is realized in languages the children are learning. To exemplify this, the works of A. Grégoire, S. Phanhauser, I. A. Sikorskiy, P. Smoczyński and A. H. Gvozdev might be consulted<sup>46</sup>. Ohnesorg (*Fonet. studie II*, p. 56) suggests a plausible explanation of this widespread phenomenon in children. In accordance with Smoczyński (*op. cit.* p. 23 and 37) he believes that all children pronounce their [t] and [d] in the first phase with the tip of the tongue leaning against the lower teeth. If this holds good generally, an explanation for the existence of palatalization is easy even with those children whose mother tongue has no palatalized or palatal plosives in the consonant repertory. The fluctuation between *t* — *t'* — *i* is due to applying a varying amount of energy to the occlusion which is produced with the blade of the tongue against the hard palate. This theory is similar to that of Sikorskiy (*op. cit.* p. 99), who explains the softness of the consonants in children's pronunciation by means of an abundant activity of the tongue in its articulatory movements. — Also J. Chlumský in his article *Les sons mouillés et la théorie de l'abbé Rousselot* (p. 541) explains the palatalization on the basis of strengthened articulation. As for the usage of palatalization as one of the means applied for expressing the emotional variants in languages in general, Machek's monograph *Studie o tvoreni výrazů expresivních* is fairly comprehensible.

<sup>45</sup> Contrary to the low functional yield of /p/ and /b/, /t/ belongs to those consonants which are distributed frequently in Czech. This is shown in the statistics of Mazlová and Kučera where it comes fourth and third in the frequency scale. — In the initial position, on the other hand, it is far less frequent, cf. Vachek, *Fonologie lexika*, p. 400.

<sup>46</sup> Cf. Grégoire, *L'apprentissage*, p. 97, S. Phanhauser, *Rozwój*, p. 290, I. A. Sikorskiy, *O razvitiiji rechi* p. 99, P. Smoczyński, *Przyswajanie* pp. 23, 37; A considerable number of examples of palatalization with Russian-speaking children can be found throughout the work of A. H. Gvozdev, *Voprosy izucheniya detskoj rechi*.

## The Plosive /d/

### Phonetic Realization

In regard to point and manner of articulation the phonetic realization of /d/ is stable.<sup>47</sup> Contrary to its voiceless counterpart no palatalized allophones were recorded in this phoneme. Characteristic is, however, the instability of the feature of voicing in all observed occurrences of /d/. But for the onomatopoeia *kokokodák* the phoneme /d/ fluctuates with /t/ and word-forms containing /t/ and /d/ exist as parallels.

### Distribution

The phoneme /d/ comes twelfth in the frequency scale of consonants. Its six observed occurrences amount to 2.8% of the stop phonemes, 2.1% of the consonantal phonemes and 1.0% of all phonemes counted. These small figures are easily explainable in view of the low distribution of /d/ in nursery forms and in interjections. As even in the current word stock of Czech this voiced alveolar phoneme does not belong to frequently used consonants<sup>48</sup>, its slight functional load is not surprising with the Czech-speaking child, the more so in that developmental stage when the distinction of voice is not yet learned well and the voiced consonant is often replaced by the voiceless one.

As for the positional occurrence, the phoneme /d/ is limited to a considerable degree. Because of the neutralization of the feature of voice word-finally, no occurrence of /d/ is possible in this position. In the realization of the first fifty words, however, no example representing its initial position was recorded, though this case is not excluded in Czech. For that reason the six occurrences of /d/ represent the total of 100% for the medial position.

## The Plosive /t/

### Phonetic Realization

Except for a higher or lower degree of palatalization, the phonetic realization of this voiceless palatal stop phoneme was stable. The depalatalization which led to the confusion of this phoneme with the alveolar one observed by Ohnesorg (cf. *Fonet. studie I*, p. 24), was not registered in our data. The sole instance where /t/ was replaced by /t/ is the before-mentioned interpretation of the interjection *tiktak* as [cita] and might be explained on the basis of other factors. Of them, the most plausible seems to be the child's selection of different phonemes for imitation the sounds of a clock than is common. Besides, the form [tiktak] is not excluded and does occur with some speakers of Czech.

### Distribution

The phoneme /t/ comes fourth in the frequency scale of consonants. Its 31 occurrences amount to 14.8% of the stop phonemes, 10.6% of the consonantal phonemes

<sup>47</sup> Ohnesorg classifies both the alveolar stops as the early acquired consonants in a Czech-speaking child. In our findings, this holds good only for the voiceless alveolar stop. — As with the pair *p/b* Ohnesorg has the confusion of the voiceless and voiced member with *t/d*. This is confirmed in our data with one difference; in our material the voiced members are always replaced by their voiceless counterparts while Ohnesorg (cf. *Fonet. studie II*, p. 23) and Janko (*Několik postřehů*, p. 131) have also the opposite examples where the voiceless consonants are replaced by the voiced ones.

<sup>48</sup> Cf. the 11th place of [d] in the frequency scales of both Mazlová and Kučera.

## Positional Distribution

### The Plosive /t/

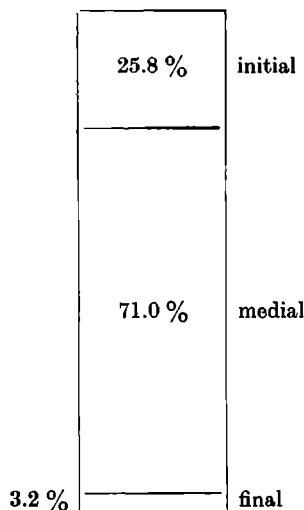


Figure 16

and 5.3% of all phonemes counted. The comparatively high frequency of this palatal stop is given by the fact that side by side with its proper occurrences, as [*kili:*] *kvítí*, [*tiktak*] *tiktak*, [*điti*] *děti*, [*ete*] *ještě*, it functions as a substitution for other consonantal phonemes whose phonetic realization is unstable as yet<sup>49</sup>. Of these, /t/ most often replaced the affricate /č/, cf. [*taj*] *čaj*, [*taji:te*], [*tajite*] *čajíček*, [*hala:*] *hačá*, [*pupuše*] *papuče*, [*jžite*] *Jiříček*, [*titi:*] *čiči* etc. Not so common but still considerable was the substitution of /t/ for the velar stop /k/, cf. [*ta:tata:*] *kakaká*, [*titiili:*] *kykyryký*. Not exceptional were other substitutions such as /t/ instead of /d/, e.g. [*titi*] *děti* or /t/ instead of a consonantal cluster *kv-* cf. [*titi:*] *kvítí*.—In emotional pronunciation /t/ functions as an expressive variant of /t/, e.g. [*a:to*] *auto*, [*hajat*] *hajat*.

As for the positional occurrence, the phoneme /t/ is found word-initially, word-medially and word-finally. The most frequent position is the medial, followed by the initial; the sole final occurrence is that in non-Standard pronunciation [*hajat*] *hajat*. Figure 16 shows the proportions of the positional occurrences of /t/.

## The Plosive /d/

As this voiced palatal stop phoneme was recorded only once in the expression *děti* while in all other cases it was either dropped or replaced by its voiceless counterpart /t/, cf. [*điti*] — [*iti*] — [*titi*], its occurrence might be more or less accidental. For this reason, both the phonetic realization and the distribution of this phoneme will be omitted in this part and dealt with in the second part of this study where—in the period of the first one hundred words—more data concerning this palatal stop phoneme will be available.

## The Plosive /k/

### Phonetic Realization

The phoneme /k/ was realized in the first fifty words as the voiceless velar stop. In most cases, however, it fluctuated with the voiceless alveolar stop signaling that the velar point of articulation has not yet been learned well. Besides, the vast majority of occurrences of /k/ were those in interjections. It is generally acknowledged in defectology that children with defective pronunciation either know from the begin-

<sup>49</sup> The high frequency of this palatal stop phoneme in our data and also in Ohnesorg's is caused by its function of replacing some other consonantal phonemes. In view of this fact it is not surprising to find /t/ distributed slightly in Czech as is shown by the statistics of Mazlová (cf. her 18th place for /t/ in the frequency scale of consonants) and Kučera (where the phoneme /t/ is ranked as the 20th one in order of frequency). As for Vachek's frequency count, he finds /t/ as one of the least distributed phonemes in the common word stock; in the onomatopoeic words, on the other hand, this phoneme comes fifth highest in the frequency scale.

ning how to pronounce the proper consonant in interjections or at least succeed in mastering it easily in these words, while in other word-categories they cling to various substitutions. The same experience might be observed in the speech development of any child<sup>50</sup>. The more difficult consonants—to which the velars no doubt belong—the child learns to pronounce first in interjections, while elsewhere he prefers their replacement by means of some easier ones. As in the realizations of the first fifty words the fluctuation of *k/t* took place even in interjections, the instability of the velar articulation in the child observed is the more obvious.

### Distribution

The phoneme */k/* comes third in the frequency scale of consonants. Its 32 observed occurrences amount to 15.2% of the stop phonemes, 10.9% of the consonantal phonemes and 5.4% of all phonemes counted<sup>51</sup>. This relatively large number perhaps requires an explanation. The vast majority of */k/* in our corpus is due to the child's predilection for interjections, which build up the greater part of his vocabulary in this period and to the fact that his name was *Jirka* (the familiar form of *Jiří*). As might be expected, the child masters and uses frequently the word which is permanently used in addressing him.

As for the positional occurrence, the phoneme */k/* was not limited and appears word-medially, word-initially and word-finally, in this order of frequency. (For the proportions see Figure 17.)

The following are some examples of occurrences of */k/*; [*kutʉuluku:*] *kutʉulukú*, [*kukʉukʉu:*] *kykyrykjú*, [*kiki:iki:*] *kykyrykjú*, [*kʉkʉda:*] *kʉkʉkʉkʉ*, [*ka:kaka:*] *kákáká*.

### Positional Distribution

The Plosive */k/*

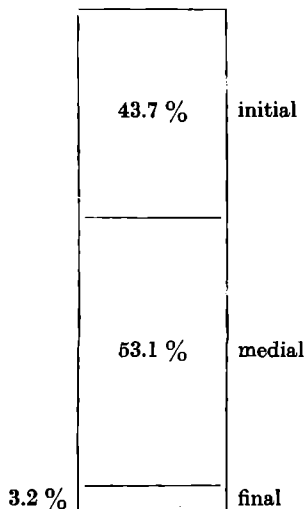


Figure 17

### The Plosive */g/*

As was expected in view of the distributional use of the phoneme */g/* in Czech<sup>52</sup>, it did not appear in the realizations of the first fifty words. As an independent phoneme it is distributed only in loan words which naturally are not present in the child's

<sup>50</sup> The data illustrating the earlier acquirement of the phonemes in interjections compared to the other word-categories are to be found in most contributions to speech development. Let us mention here at least some of them: Pavlovič, *Le langage enfantin*, p. 70, Grégoire, *L'apprentissage*, p. 89, Cl. u. W. Stern, *Kindersprache*, pp. 173 and 374, St. Phanhauser, *Rozwój*, p. 290, J. Feyeux *L'acquisition*, p. 279.

<sup>51</sup> The phoneme */k/* is also among the widely distributed phonemes in Czech, as the sixth place in the frequency scales of Mazlová and Kučera indicates. Similarly in Vachek's contribution to the statistics of Czech phonemic repertory, */k/* stands high in respect of its functional load, regardless of the character of words.

<sup>52</sup> The special status of */g/* is discussed in detail by H. Kučera in his monograph, *The Phonology of Czech*, see pp. 36–38. — See also his *Inquiry into Coexistent Phonemic systems in Slavic languages*, American contributions to the Fourth International Congress of Slavists (The Hague, 1958, p. 170 ff.).

vocabulary of this period. In non-loans [g] has the status of a voiced allophone of the phoneme /k/ and occurs in the consonantal clusters in the voiced surroundings, due to the assimilation of voice. As all consonantal clusters are simplified in this developmental stage, no assimilation takes place and such allophone which would arise under such circumstances is not found in the child's phonemic repertory<sup>53</sup>.

The unstable character of the velar stops /k/ and /g/ and their confusion with their alveolar counterparts is common to the first developmental stages with children and was mentioned as early as by Quintilian. In Ohnesorg's *Fonet. studie II* (p. 25), a list of investigators in this field who either deal with these problems, or have comprehensive data in their findings, is to be found. On the basis of what has been said so far we may take for granted that the velar stops appear in the child only after the perfect mastering of the alveolar stops. The lapse of time, however, differs to a considerable degree. Some children learn to articulate the velar stops very quickly, other need a longer time to master them and even data illustrating their replacement by alveolar stops at the age of six can be found.

To explain the late acquisition of the velar stops various theories have been promulgated. Let us quote here at least the most widespread:

1. the difficult articulation (the rise of the tongue blade upwards and the occlusion against the soft palate),
2. no visual support for velar articulation and the lack of active imitation of the velar consonants,
3. the difficult acoustic differentiation between the velar and alveolar stops which often results in their mutual confusion even in adults, especially when interpreting some unknown item.

In spite of all these difficulties some children have the velars in their phonemic systems comparatively soon. Thus R. Weir (op. cit. p. 44) considers /k/ and /g/ as equivalent partners to /t/ and /d/ without any phonetic or functional discrimination for the velars. Similarly R. Burling (op. cit. p. 48) classifies the stops /p/, /t/, /k/ as the first mastered consonants not mentioning the longer learning process for /k/. After mastering the feature of voicing, all their voiced counterparts, i.e. /b/, /d/, /g/ were established in the child's consonantal system. — One important fact, however, must be kept in mind when comparing the sequence of development and the time of acquirement of the velar phonemes. Both R. Weir's and R. Burling's subjects were learning English, where both velar stops have the status of an independent phoneme, being thus limited neither positionally nor with regard to the character of words. The English child has therefore a much greater possibility of hearing and interpreting them than the Czech child. — Khvatsev attaches the greatest importance in the developmental process to hearing. For this reason, the child masters first those phonemes which are easily distinguishable acoustically. To exemplify this he mentions the pairs /a/ — /u/ and /p/ — /g/, thus suggesting the early acquisition of /g/ with Russian-speaking children (cf. here that in Russian too, as in English, /k/ and /g/ are independent phonemes).

## THE NASAL CONSONANTS

### The Nasal /m/

#### *Phonetic Realization*

As with the phonetic realization of the oral bilabial stop /p/, so too the phonetic realization of the nasal bilabial stop /m/ was fairly stable in the very first period of the child's language development. This is consistent with the findings of all investigators in this field and bears out Jakobson in his theory on the development of the phonemic system in the child, establishing as the first consonantal contrast that of oral *versus* nasal.

<sup>53</sup> Both Ohnesorg and Bartoš rank /g/ among the consonants which are acquired late in Czech children, cf. Ohnesorg, *Růst slovní zásoby*, p. 85, L. Bartoš, *Observations*, p. 7.

## Distribution

The phoneme /m/ comes sixth in the frequency scale of consonants<sup>54</sup>. Its 27 occurrences in the realizations of the first fifty words amount to 12.9% of the stop phonemes, 9.2% of the consonantal phonemes and 4.6% of all phonemes counted. The explanation for the large numbers of /m/ in the vocabulary of the first developmental stage is roughly the same as we have offered in the analysis of /p/ and /b/: because of easy phonetic realization /m/ is one of the most widespread phonemes in the nursery forms, of which the parental term *máma*<sup>55</sup> is especially frequent in our corpus. The functional load of /m/ is, nevertheless, considerably high also in the interjections, another category of words the phonemic inventory of which exerts a strong influence on the frequency counts. The following are some examples: [ham], [ham] *ham!*, [mu], [mut] *muk*, [bum] *bum*, [mɛ:mɛ], [mɛ:] *mémé*, *kutululum kutululú* etc.

The place of occurrence is not limited and /m/ appears word-initially, word-medially and word-finally. The most frequently used is the initial and following it is the medial position. In view of what has been said as to the dropping of the final consonants it is surprising to find 26% of distributional proportions of /m/ word-finally. With this figure the phoneme /m/ ranks as the first consonant in this position and builds up the majority of the closed syllables in this period. Figure 18 shows the proportional occurrences of /m/.

**Positional Distribution**

The Nasal /m/

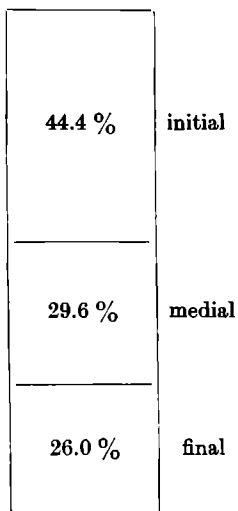


Figure 18

**Positional Distribution**

The Nasal /n/

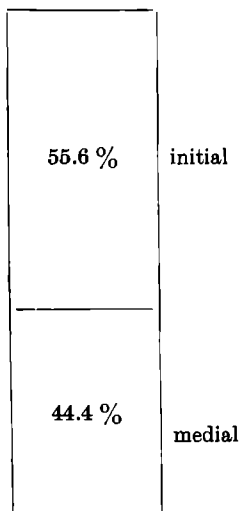


Figure 19

<sup>54</sup> In the frequency counts in Standard Czech too the phoneme /m/ belongs to the highly distributed consonants, cf. its 7th place in the frequency scale of Mazlová and Kučera. — In the initial position of the words investigated by J. Vachek, its functional load is somewhat lower.

<sup>55</sup> This is, however, not meant as confirmation of the current opinion that the parental term *máma* must necessarily be the first item the child masters and uses. — On this question, see M. Cohen, *Langage enfantin*, p. 182.

## The Nasal /n/

### Phonetic Realization

As with /m/, the phonetic realization of the alveolar nasal /n/ was also well established in this period. Except for slight deviations as regards the point of articulation, resulting in the rise of palatalized allophones of this phoneme, the realization was stable.<sup>56</sup>

### Distribution

The phoneme /n/ comes tenth in the frequency scale of consonants. Its nine occurrences in the realizations of the first fifty words amount to 4.3% of the stop phonemes, 3.1% of the consonantal phonemes and 1.5% of all phonemes counted. The comparison with the figures given for the bilabial nasal shows that the alveolar nasal is used far less often<sup>57</sup>. Its occurrence in this developmental stage is restricted to a few items, viz. the particles *ano*, cf. [ano:], [ano], [hano] and *ne*, cf. [ne:], [ne:], [n̥:], [nee:] and the parting greeting *na shledanou* realized in a distorted form as [nosono:].

As far as the positional occurrence is concerned, the phoneme /n/ is limited at this stage of speech development too. Of the three possible positions only two, viz. the initial and the medial, were recorded. Figure 19 shows their relative proportions.

The velar allophone of /n/ did not appear in this period. In view of the fact that in the realizations of the first fifty words all consonantal clusters are simplified and no assimilation takes place, the lack of the combinatory variant is to be expected.

## The Nasal /ň/

### Phonetic Realization

The phonetic realization of the palatal nasal stop may be considered as established with small deviations in the degree of palatalization<sup>58</sup>.

### Distribution

The phoneme /ň/ comes fourteenth in the frequency scale of consonants. Its 4 occurrences in the realizations of the first fifty words amount to 1.9% of the stop phonemes, 1.4% of the consonantal phonemes and 0.7% of all phonemes counted<sup>59</sup>.

The distribution of /ň/ is limited not only as regards the place of occurrence but also as regards the character of the words. The three initial occurrences are due to the simplifying of the consonantal cluster [mň-] in the interjection *mňau* realized as

<sup>56</sup> The proper articulation, with some exceptions of the realizations of the palatalized allophones was observed by Ohnesorg in both his children, cf. *Fonet. studie I*, p. 23, *Fonet. studie II*, p. 23. — As an early established phoneme this nasal appears in the study of R. Burling, cf. *Language Development*, p. 46.

<sup>57</sup> Contrary to the child's speech, /n/ belongs to the most widely distributed consonants in Czech, cf. its third and fourth place in the frequency scales of Mazlová and Kučera.

<sup>58</sup> The stable phonetic realization of this palatal nasal except for a few instances of its depalatalization is found by Ohnesorg in both his monographs, cf. *Fonet. studie I*, p. 24, *Fonet. studie II*, p. 25.

<sup>59</sup> Like the alveolar nasal, the palatal nasal also belongs to the fairly distributed consonants in Czech, cf. its 12th place in the frequency scales of Mazlová and Kučera. Compared to the other palatal phonemes the nasal shows a striking preponderance, cf. the 12th, 21st and 24th place for the phonemes /ň/, /l/ and /d/ respectively. The frequency order in the child observed is rather different: /l/ comes first (which is, as was shown before, caused by the function of replacing other consonantal phonemes in this developmental stage); the following is /ň/ while /d/ comes last.

[*ħa:*], [*ħau*], [*ħau:*]. Word-medially, /*ħ*/ appeared as an expressive variant instead of the alveolar phoneme /*n*/ in the particle *ano*, cf. [*aħno:*]. No occurrences were recorded word-finally. Figure 20 indicates the proportions of the two positions.

### Positional Distribution

The Nasal /*ħ*/

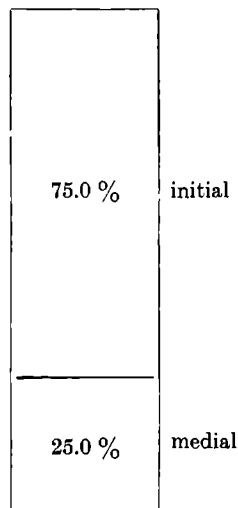


Figure 20

### Summary

In summarizing the findings on the plosive consonants in the realizations of the first fifty words the following conclusions can be drawn:

With the exception of the velar stop [*g*] the child has in his inventory all plosive consonants that build up the consonantal system in Standard Czech. Not all of them are, however, established equally well. The voiceless stop phonemes, especially the front ones, represent evidently a more mature developmental stage, compared to the voiced ones.

Differences are found too, as far as the distribution of the stop phonemes is concerned. The number of occurrences in the child's speech does not, as a rule, correspond to that given for Standard Czech. Due to the special content of the child's vocabulary, in which nursery forms and interjections whose phonological structure is not identical with that of other words form a considerable proportion, the data are hardly comparable.

In terms of features, stop articulation has been learned well<sup>60</sup> and so has the feature of nasality. With minor exceptions also the contrasts based on the place of

### The Plosive Consonants

	Initial		Medial		Final		Total numbers			
							stops	consonants	phonemes	
<i>p</i>	19	51.4 %	17	45.9 %	1	2.7 %	37	17.6 %	12.7 %	6.3 %
<i>b</i>	16	53.3 %	14	46.7 %	—	—	30	14.3 %	10.3 %	5.1 %
<i>t</i>	16	48.5 %	12	36.4 %	5	15.1 %	33	15.7 %	11.3 %	5.6 %
<i>d</i>	—	—	6	100.0 %	—	—	6	2.8 %	2.1 %	1.0 %
<i>l</i>	8	25.8 %	22	71.0 %	1	3.2 %	31	14.8 %	10.8 %	5.3 %
<i>ɸ</i>	1	100.0 %	—	—	—	—	1	0.5 %	0.3 %	0.2 %
<i>k</i>	14	43.7 %	17	53.1 %	1	3.2 %	32	15.2 %	10.9 %	5.4 %
<i>g</i>	—	—	—	—	—	—	—	—	—	—
<i>m</i>	12	44.4 %	8	29.6 %	7	26.0 %	27	12.9 %	9.2 %	4.6 %
<i>n</i>	5	55.6 %	4	44.4 %	—	—	9	4.3 %	3.1 %	1.5 %
<i>ħ</i>	3	75.0 %	1	25.0 %	—	—	4	1.9 %	1.4 %	0.7 %
<b>Total</b>	<b>94</b>	<b>44.8 %</b>	<b>101</b>	<b>48.1 %</b>	<b>15</b>	<b>7.1 %</b>	<b>210</b>	<b>100.0 %</b>	<b>71.9 %</b>	<b>35.7 %</b>

Figure 21

<sup>60</sup> This is consistent with all the findings on child language as well as with the findings in defectology, cf. e.g. *Frekvence dyslalií a jejich fonetický výklad*, in the volume *Československá logopedie*,



articulation are clearly established. The child nevertheless shows greater stability with the front stops as compared to the back ones. Also the frequency counts indicate the child's predilection for the front stops (cf. Figures 22—25). This is no doubt due to the fact that velar stops are rare in nursery forms and if they occur, they are very often replaced by the alveolar ones thus neutralizing the feature front *versus* back.

**Stop Phonemes**  
Points of Articulation

18.9 %	velar
18.9 %	palatal
22.9 %	alveolar
39.3 %	bilabial

Figure 22

**Stop Phonemes**  
(including nasals)  
Points of Articulation

15.3 %	velar
17.1 %	palatal
22.8 %	alveolar
44.8 %	bilabial

Figure 23

This, however, does not hold good for the nasals. As for the timing, the earlier appearance of the front nasals, compared to the back ones, is evident<sup>41</sup>. The velar nasal is mastered later even with those children whose native consonantal system contains this stop as an independent phoneme, e.g. English and German. The more easily explicable is its later appearance in Czech, where it represents but a positional variant of the phoneme /n/ and where its existence presupposes the realization of consonantal clusters. There are, however, no documents to my knowledge which would illustrate the usage of the alveolar variant instead of the proper velar one with a Czech-speaking child in that developmental stage when he has the velar stops and the consonantal clusters in his phonemic inventory<sup>42</sup>. This is rather at odds with

Praha 1956, pp. 100—113 where the references to similar results in non-Czech authors can be found. — See also M. Seemann, *Poruchy*, p. 95.

<sup>41</sup> On the priority of the front nasals compared to the back ones cf. the phenomenon common in languages in general: there are languages which have in their phonemic inventories the alveolar nasal while the velar one is missing, e.g. Russian or Macedonian. On the other hand, we could hardly find the opposite case.

<sup>42</sup> Cf. B. Hála, *K popisu dětské výslovnosti*, p. 195, where the author has this observation:

R. Jakobson who presupposes the alveolar substitutions for the velar consonants not only for stops but for nasals as well<sup>63</sup>.

The feature of voicing has not been mastered by the child as yet. The fluctuation of voiced and voiceless stops took place at bilabial, alveolar and palatal points of articulation, the bilabial one being the most frequent. The velar point is not mentioned

**Stop Phonemes**  
Front versus Back

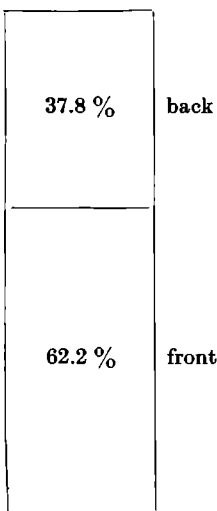


Figure 24

**Stop Phonemes**  
(including nasals)  
Front versus Back

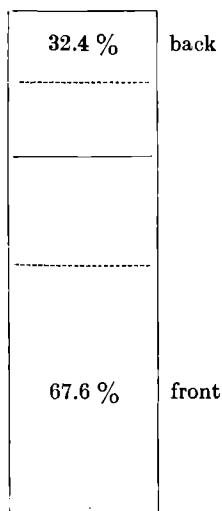


Figure 25

here as only the voiceless stop occurs in the child's idiolect in this period. In all cases recorded, the expected voiced stops were replaced by their voiceless counterparts with no exception to this rule. On this basis we can explain the striking predominance of the voiceless stops compared to the voiced ones. As for position, the confusion between voiced and voiceless stops occurred word-initially and word-medially. No example, on the other hand, has been registered word-finally. To explain this, two phenomena must be taken into consideration: the neutralization of the feature of voice in the final position, obligatory for Standard Czech, and the boy's usage of dropping the final consonants. The few consonantal occurrences in this position were either proper voiceless stops, or the bilabial nasal /m/, which has no voiceless counterpart.

"It is of great interest to see that even a small child realizes [ŋ] when followed by /k/ or /g/ at the velar point, not at the alveolar one."

<sup>63</sup> Cf. R. Jakobson, *Kindersprache*, p. 362: "Ursprünglich werden beim Kinde die beiden hinteren Nasalkonsonanten durch [ŋ] ersetzt und überhaupt die hinteren Verschlusslaute der Muttersprache durch die entsprechenden Dentalen."

**Stop Phonemes**  
Voiceless *versus* Voiced

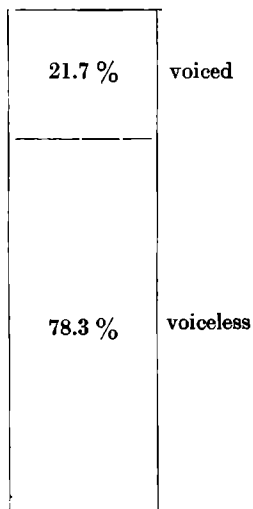


Figure 26

**Stop Phonemes**  
(including nasals)  
Voiceless *versus* Voiced

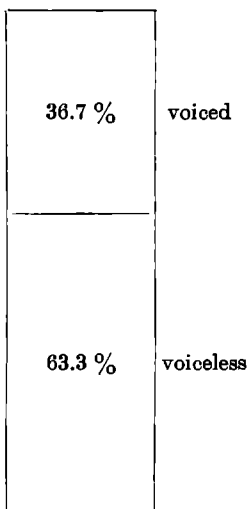


Figure 27

The loss of the feature of voice and the confusion between voiced and voiceless stops has been noticed by many investigators who analysed speech development. Among those whose subjects were Czech-speaking children we might mention Ohnesorg, cf. *Fonet. studie I*, p. 42, *Fonet. studie II*, p. 53, *Une contribution à la pédophonétique*, p. 265 ff., F. Trávníček, *O vývoji dětské řeči*, p. 150, J. Janko, *Několik postřehů*, p. 131 and L. Bartoš, *Observations*, p. 6. Among non-Czech authors at least these few should be recalled in this connection: Cl. u. W. Stern, *Kindersprache*, p. 334, Albright R. W. and Albright J. B., *The Phonology of a Two-Year-Old Child*, p. 389, M. Cohen, *Sur l'étude du langage enfantin*, pp. 115, 124, J. Feyeux, *L'acquisition*, p. 69, A. Grégoire, *L'apprentissage*, p. 206, M. Grammont, *Observations*, p. 69. R. Weir (*Language in the Crib*, p. 47—48) has also examples illustrating the loss of the feature of voicing in her son's speech. Unlike other authors she explains it on the basis of environmental influence. She herself, having Czech and German as her native languages, does use the neutralization

of the feature of voice word-finally in her non-native English as well and suggests that the child imitated her speech in this regard. Other examples are, in her opinion, due to the boy's imitation of the Danish pronunciation of English which often neutralizes voicing in any position according to the Danish contrastive system.

As with the vowels, so too with the consonants, few additional sound differences unknown to Standard Czech appeared in the child. One of these, the aspiration, was mentioned in the analysis of the plosive /p/. The others follow: the contrast palatalized *versus* non-palatalized was adopted to express the difference between emotional and non-emotional utterances.—There were a few phonetic occurrences of the glottal stop in positions different to Standard Czech: in most cases, it replaced the proper final consonants, mostly /k/ or /c/; in others, however, it was used for emotional effect, especially in strong negation.

## THE FRICATIVE CONSONANTS

### The Fricatives /f/, /v/

The phonetic realization of these two labiodental fricative phonemes has not been mastered and their distribution in the first fifty words is restricted to a considerable degree.

As for the voiceless /f/, only one occurrence was recorded, viz. in the final position of the interjection *haf*, realized as [haf]. The same word, however, had two other forms, cf. [hap] and [haf]. The fluctuation between bilabial stop, bilabial fricative

and labiodental fricative illustrates that neither the fricative articulation nor the proper point of articulation has been acknowledged by the child<sup>64</sup>.

The voiced labiodental fricative /v/ has no occurrence in the corpus of the first fifty words.

### The Fricatives /s/, /z/, /š/, /ž/

Most of the findings on speech development agree that the proper articulation of the sibilants is acquired late while in the first stages they are replaced by a considerable number of allophones more or less palatalized which freely fluctuate among themselves<sup>65</sup>. As an explanation for this phenomenon the difficult phonetic articulation of the sibilants and the necessity of their precise acoustic control is offered. In our data the theory of the late acquirement of the sibilants in the child is once again confirmed. In the realizations of the first fifty words the hissing sounds are represented by a single occurrence of the voiceless /s/ in the echo distortion of the greeting *na shledanou* [nosono:]. Its voiced counterpart /z/ did not appear at all. The hushing sounds, on the other hand, had nine occurrences. The voiceless /š/ appeared six times in the various realizations of the verb *pršet*, cf. [puši:], [pu:šet], [pešejo], [pušet]. The remaining two occurrences were the syllabic allophones [ʃ̩], [ʃ̩], by means of which the boy imitated the onomatopoeic sound of rain. All the three occurrences of /ž/ represented a substitution for the vibrant /ʒ/ in the boy's name *Jiří*, cf. [iži:], [jiži:če], [jiži:te].

The phonetic realization of all these sibilants was very unstable and it would be hardly possible to express the differences in phonetic transcription. Roughly, they might be characterized as palatalized fricatives whose articulation sphere fluctuates between the hissing and hushing sounds. Like the labiodental fricatives, so too the sibilants are to be left aside as not mastered in this developmental stage.

### The Fricative /j/

#### Phonetic Realization

The articulation of this voiced-unpaired phoneme /j/ has been stabilized in the very first words of the child. No deviations from the Standard usage were recorded and, unlike other fricative phonemes, /j/ has neither been dropped nor replaced by

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<sup>64</sup> On the realization of the bilabial fricative [ɸ] or bilabial stop [p] instead of the proper labiodental fricative [f] cf. Albright, *The Phonology*, p. 389.

The findings of other investigators in regard to unstable realization of /ff/ and /v/ are similar to ours. Let us confront at least some of them: Ohnesorg (*Fonet. studie II*, p. 29) mentions the fluctuation [w] — [ɸ] — [f] — [p]. — The confusion between bilabial and labiodental articulation as well as the confusion between stop and fricative articulation is also shown by R. Weir, cf. *Language in the Crib*, p. 51. — R. Burling, *Language Development*, pp. 47, 48, has these data concerning the phonemes /ff/ and /v/: His bilingual child began to use a labiodental /ff/ approximating to English at the age of 1, 7, 0 and with the refinement of the voiced-voiceless opposition that was achieved shortly afterwards, he briefly used /v/ as well. Because his other language, Garo, does not have the phonemes near to this position, /ff/ and /v/ not only failed to become established but disappeared completely for a period and were replaced in English words by the bilabial stops. Once again the child began to use /ff/ and /v/ at 2, 4, 0, but even at 2, 7, 0 these consonants were inconsistently articulated.

<sup>65</sup> Cf. Ohnesorg, *Fonet. studie I*, p. 32 where alongside the author's data the bibliography concerning this question may also be found.

## Positional Distribution

The Fricative /j/

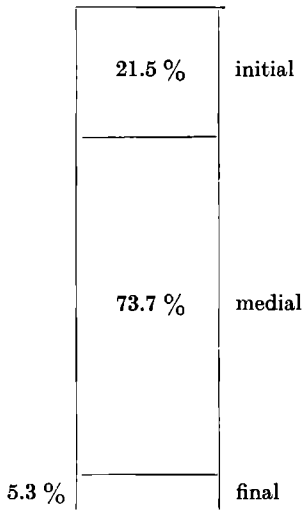


Figure 28

other consonants. The phonetic realization of this fricative consonant can therefore be considered as being thoroughly well learned<sup>66</sup>.

## Distribution

In spite of the low number of occurrences the phoneme /j/ comes eighth in the frequency scale of consonants and is the second highest distributed fricative. Its 19 occurrences in the realizations of the first fifty words of this period amount to 23.2% of the fricative phonemes, 6.5% of the consonantal phonemes and 3.2% of all phonemes counted. The frequent occurrence as well as the stability of /j/ is to be explained in the same way as the high frequency and the stability of the stops: because of its easy articulation /j/ belongs to those phonemes which build up the fundamental stock of words with the child. Besides the interjections [jajaja:] *lalalá*, [kikijiki:] *kykyryký*, [haji:] *hají*, [hija:] *hijá* it occurs in the items that express the basic daily wants and needs, e.g. [hajal] *hajal*, [taj] *čaj*, [taji:čej] *čajiček* and, last but not least, in the boy's name *Jiří*<sup>67</sup>.

In most instances, /j/ is used in its proper places. Some occurrences, however, are to be explained by its function of replacing other consonantal phonemes, viz. /l/ and /r/. To illustrate this, let us mention at least a few examples: [maja: maja:] *malá malá*, [jajaja:] *lalalá*, [bajj] *balon*, [pešejo] *pršelo*, [kikijiki:] *kykyryký*<sup>68</sup>.

As for the positional occurrence, the phoneme /j/ is not limited and is distributed word-medially, word-initially and word-finally, in this order of frequency. Figure 28 shows the proportions of its distribution.

## The Fricative /x/

The velar fricative phoneme /x/ had four total occurrences in the realizations of the first fifty words. Two of them appeared in the interjection [xu xu] which represented both the *pig* and its *grunting*. The remaining two are due to the fluctuation between voiced and voiceless consonants which was fairly common in this period, cf. [xam]—[ham], [xami]—[hami]. Neither of these examples suffices as evidence for considering this velar fricative as acknowledged by the child, in spite of the fact that its

<sup>66</sup> This, however, does not hold good for all Czech children. Thus Ohnesorgs' boy (cf. *Fonet. studie I*, p. 30) mastered this palatal fricative only at the age of 2, 5, 20, while in the earlier period it was replaced by the lateral /l/ which was more or less palatalized. — Similarly L. Bartoš, cf. *Observations*, p. 7 mentions later acquisition of the palatal fricative /j/ compared to the lateral /l/. Ohnesorg's daughter, on the other hand, articulated /j/ early and correctly, cf. *Fonet. studie II*, p. 31.

<sup>67</sup> In Czech, the phoneme /j/ is a widely distributed consonant, cf. the statistical countings of Mazlová and Kučera where /j/ comes ninth and tenth in the frequency scale of consonants.

<sup>68</sup> The fluctuation *l/j* is common with most children; similarly, the examples where /r/ is replaced by /j/ might be found in most treatises on speech development.

phonetic realization did not differ markedly from that of Standard Czech. It had been already quoted that children know how to pronounce the proper consonants in the interjections while in other word-categories they use substitutions for them. The employment in the nursery form *ham* realized as [xam], [xami] is but a confirmation of the instability of the feature of voice. The voiced laryngeal fricative is here—in agreement with the usage in Standard Czech—replaced by the velar fricative [x], which functions as its voiceless paired counterpart, though the point of articulation is different.

## The Fricative /h/

### Phonetic Realization

In spite of the difficulty in articulation (cf. B.. Hála, *Uvedení*, p. 248), /h/ appeared in the very first words of the child and its phonetic realization was fairly stable. But for the loss of the feature of voice no deviations in its pronunciation were recorded<sup>69</sup>.

### Distribution

The laryngeal fricative /h/ comes seventh in the frequency scale of consonants while among fricatives it is the most widely distributed phoneme. Its 22 observed occurrences in the realizations of the first fifty words amount to 26.8% of the fricative phonemes, 7.5% of the consonantal phonemes and 3.7% of all phonemes counted.

As for place, the phoneme /h/ is, like all Czech paired consonants, restricted to the initial and medial position. In both these positions, /h/ appears in the child's idiolect, and the proportion is shown in Figure 29. Compared to the other fricatives the high predominance of /h/ word-initially is rather surprising. From the total of fricatives in this position the 18 occurrences of /h/ constitute 54.5%. The question arises of why this fricative—contrary to all the others—is not dropped here, and furthermore, why it does appear even in such instances where its occurrence cannot be explained etymologically. As the children's realizations [*hano*], [*ha:to*], [*hauto*] instead of *ano*, *auto* are not exceptional, and corresponding examples can be found even in works based on an analysis of non-Czech children, an explanation is required. Not very convincing, however, is the opinion proclaimed by Pasch (and supported by Nadolezcný and Berendes)<sup>70</sup>, who tries to account for the existence of prothetic /h/ on the basis of a defective pronunciation of the initial vowel. A comparison of the use of /h/ word-initially in baby talk with its prothetic or possibly hiatic character in colloquial and dialectal pronunciation might throw some light on this question.

As for the character of the words containing the phoneme /h/ in this develop-

Positional Distribution  
The Fricative /h/

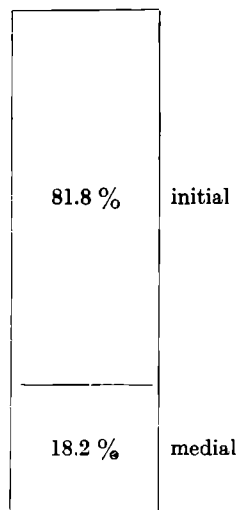


Figure 29

<sup>69</sup> The early establishment of /h/ is observed also by Ohnesorg in the speech of both his children, cf. Ohnesorg, *Fonet. studie I*, p. 40 and *Fonet. studie II*, p. 23.

<sup>70</sup> On this question, see Ohnesorg, *Fonet. studie II*, pp. 19, 20.

mental stage, a considerable restriction is evident. Besides the interjections like *haf*, *hú*, *hjá*, *kukuruhú*, it occurs only in nursery forms, while the other parts of speech which would have /h/ in their phonemic repertory have not appeared as yet.

## THE LATERAL CONSONANTS

### The Lateral /l/

The lateral phoneme /l/ had fourteen occurrences (of these two word-initial and twelve word-medial) in the first fifty words. Only in the interjection *kutululú*, however, it was realized as the proper lateral fricative, while in all other cases fluctuation between /l/ and /lj/ took place, pointing thus to the so far unstable character of both manner and point of articulation of the lateral /l/<sup>71</sup>.

## THE VIBRANT CONSONANTS

### The Vibrants /r/, /ř/

As was expected in view of the findings of other investigators, neither of these two vibrants appeared in the realizations of the first fifty words.

As for /r/, it was either dropped, cf. [kikiiki:] *kykyryký* or replaced by the palatal fricative /j/, cf. [kikijiki:] *kykyryký*. Its syllabic allophone /r/ was—again in agreement with other findings—replaced by the vowel /u/ or /e/, cf. [pušet] *pršet*, [xu xu] *chr chr*; [pešejo] *pršelo*.

Also the vibrant /ř/ is missing as yet and is replaced by the fricative /ž/. The employment of /ž/ instead of the voiced allophone of /ř/ has been consistent and only at the age of 3, 2, 6 the phonemic repertory of the child was completed by mastering the phoneme /ř/ as the last one in the developmental chain of consonants.

## THE SEMI-OCCLUSIVE CONSONANTS

### The Affricates /c/, /č/

Both the hissing and hushing affricates are rare in this developmental stage.

As for /c/, the sole proper occurrence was observed in the interjection *bác*. Rather exceptional is the occurrence of this affricate in [cíta] *tiktak*, where it replaces the palatal plosive /t/ and in [cítí], where it takes the place of the consonantal cluster *kv-*, cf. *kvítí*.

The hushing affricate /č/ had seven occurrences, two of them word-initial and five

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<sup>71</sup> This is in accordance with many investigators of child speech, and with many phoneticians as well, who stress both its late acquisition and difficult articulation. These are e.g. Leopold, Grégoire, Grammont, Hála, Sovák etc. — There are, however, exception to this generally accepted opinion. Thus Ohnesorg has /l/ as an early acquired consonant with his boy, cf. *Fonet. studie I*, pp. 38, 39. Similarly Bartoš, *Observations*, p. 7. — Also R. Weir finds the relatively great stability of /l/ in the analysis of the pre-sleep monologues of the two and a half-year-old boy, cf. *Language in the Crib*, p. 79.

word-medial, cf. [čiči:], [čiči] čiči, [hači:] hači, [pupuče] papuče, [jižiče] Jižiček. All these forms, however, fluctuated with [titi:], [hali:], [pupule], [jižile], where the proper affricate was replaced by the palatal stop. There were, however, even such cases where only the form containing the palatal stop was realized, while its parallel containing the affricate was missing as yet, cf. čaj pronounced as [taj], [taji:tə], [tajile:].

The low distribution of the affricates as well as their replacement by means of the stops shows the unstable character of the feature of semi-occlusivity at this stage of speech development. In all instances the affricates recorded were the voiceless ones while their voiced allophones—due to the non-existence of the consonantal clusters—did not appear at all.<sup>72</sup>

**The Fricative Consonants**  
(including the affricates)

	Initial		Medial		Final		Total numbers			
							fricatives	consonants	phonemes	
<i>f</i>	—	—	—	—	2	100.0 %	2	2.4 %	0.7 %	0.3 %
<i>v</i>	—	—	—	—	—	—	—	—	—	—
<i>s</i>	—	—	1	100.0 %	—	—	1	1.2 %	0.3 %	0.1 %
<i>z</i>	—	—	—	—	—	—	—	—	—	—
<i>š</i>	1	16.7 %	4	66.6 %	1	16.7 %	6	7.3 %	2.1 %	1.0 %
<i>ž</i>	—	—	3	100.0 %	—	—	3	3.7 %	1.0 %	0.5 %
<i>j</i>	4	21.0 %	14	73.7 %	1	5.3 %	19	23.2 %	6.5 %	3.2 %
<i>x</i>	3	75.0 %	1	25.0 %	—	—	4	4.9 %	1.4 %	0.7 %
<i>h</i>	18	81.8 %	4	18.2 %	—	—	22	26.8 %	7.5 %	3.7 %
<i>l</i>	2	14.5 %	12	85.5 %	—	—	14	17.1 %	4.8 %	2.4 %
<i>r</i>	—	—	—	—	—	—	—	—	—	—
<i>ř</i>	—	—	—	—	—	—	—	—	—	—
<i>c</i>	3	75.0 %	—	—	1	25.0 %	4	4.9 %	1.4 %	0.7 %
<i>č</i>	2	28.5 %	5	71.5 %	—	—	7	8.5 %	2.4 %	1.2 %
<b>Total</b>	<b>33</b>	<b>40.3 %</b>	<b>44</b>	<b>53.6 %</b>	<b>5</b>	<b>6.1 %</b>	<b>82</b>	<b>100.0 %</b>	<b>28.1 %</b>	<b>13.9 %</b>

Figure 30

Summary

To summarize the findings on fricatives and affricates, we have to say that, in distinction to the stops, both the fricatives and the affricates are very unstable in this developmental stage.

As for the former, neither the fricative articulation nor the functional values of the fricative phonemes has been mastered perfectly. The contrasts which are phonemically relevant in Standard Czech, viz. *voice—lack of voice*, are not employed in the fricatives in the child's idiolect of this period. The existence of both voiced and voice-

<sup>72</sup> Most of the investigators in this field do agree on the point that the affricates appear late in speech development and are in the early stages replaced by the stops or—after the child has mastered the fricative articulation—by the corresponding fricatives. On this question see R. Jakobson, *Kindersprache*, p. 364; K. Öhnesorg, *Fonet. studie I*, p. 36, *Fonet. studie II*, p. 36; L. Bartoš, *Observation*, p. 8.



less member is exceptional. In most instances attempts at the realization of the voiceless fricatives were recorded, while their voiced counterparts are missing, showing thus the priority of the unmarked features. To exemplify this we might recall the appearance of /f/—regardless of instability both in manner and point of articulation—while /v/ is missing. The same holds good of sibilants: /s/ did appear, /z/ did not. As for the existence of both members of the hushing sibilants, one important fact must be kept in mind: while /š/ was used in its proper place, /ž/ was employed not as the voiced counterpart of /š/ but as a substitution for /ř/. It is comprehensible that in spite of its difficult articulation /ž/ is preferred by the child when a substitutive sound for an even more difficult consonant, viz. /ř/ is needed.

As may be seen in the imperfect phonetic realization of the phoneme /l/, the lateral articulation is not established as yet. Besides laterality another feature has to be mentioned in connection with later acquisition of /l/ in children. Together with the vibrant /r/, the lateral /l/ forms the group of liquids. These consonants, like the nasals, combine consonantal closure with vocalic opening, but with one difference: while with nasals this function is performed within two cavities (the consonant quality belonging to the oral, the vocalic to the nasal), with liquids both the contrastive functions are combined in one cavity, the oral one, making the contrast liquid *versus* consonant all the more difficult.

The vibrants /r/ and /ř/ have no occurrence, being thus excluded from the consonantal inventory of this period.

As for the latter group, both the affricates /c/ and /č/ did appear; their distributional status, unstable realization and their replacement by means of stops and fricatives, however, betray the instability of this manner of articulation.

When following the contrasts based on the point of articulation, these oppositions could be traced: labial, labiodental, palatal, velar and glottal. In other words, all the distinctions that are phonemically relevant in Standard Czech appear in the child, though many fricative phonemes which should be realized in these areas are either absent or restricted both in number and in character of words. Thus in the labial area only /f/ is realized while /v/ is missing. As for the alveolars, the child does not use /z/, /r/, /ř/ and /s/, /l/, /c/ and /č/ are very unstable so far<sup>73</sup>. Well learned, on the other hand, is the palatal fricative /j/ and also the frequency of its occurrence

is proportionate, with no restriction in distribution. This, however, cannot be said of the velar fricative /x/, whose sporadic occurrence was recorded only in interjections. The laryngeal fricative /h/ has comparatively stable phonetic realization but a special distributional status. Though it comes first in the frequency scale of the fricative phonemes, its occurrence is restricted to the nursery forms and interjections. In view

### Fricative Phonemes

#### Points of Articulations

2.4 %		labiodental
4.9 %		velar
23.9 %		palatal
26.8 %		laryngeal
42.7 %		alveolar

Figure 31

<sup>73</sup> Cf. here the statement of Sikorskiy, *O razvitiyi rechi*, p. 93 according to which the child at a certain stage of speech development is unable to pronounce the consonants /š/, /č/, /r/, /z/, /l/.

of what has been said of the exceptional character of these words we cannot consider /h/ an equivalent partner to the other consonants, which are not limited in this way. As far as the frequency of the fricative consonants is concerned, the most widely distributed are the alveolars; the laryngeal /h/, palatal /j/, velar /x/ and labiodental /f/ follow. Figures 31 and 32 show the proportions of the areas of articulation. In total numbers, the back fricatives predominate over the front ones.

**Fricative Phonemes**  
Front *versus* Back

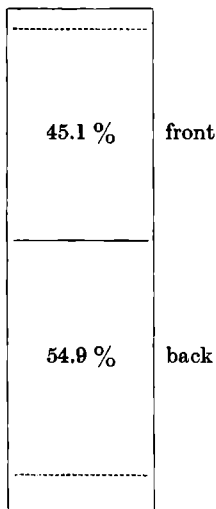


Figure 32

**Fricative Phonemes**  
Voiceless *versus* Voiced

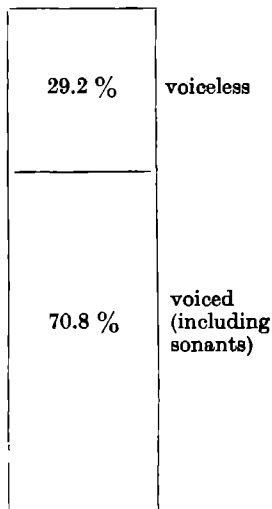


Figure 33

**Fricative Phonemes**  
Voiceless *versus* Voiced

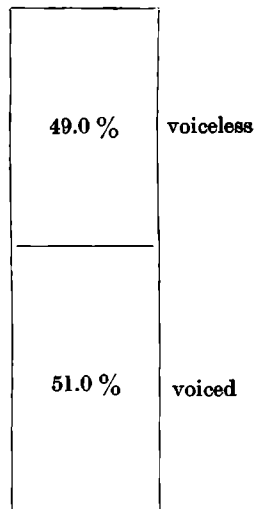


Figure 34

The proportions of the voiceless and voiced fricative consonants realized in the first-fifty-word period are given in Figure 33. In view of what has been said on the priority of the voiceless consonants, the high preponderance of the voiced fricatives is rather surprising. A plausible explanation for this discrepancy is perhaps in the fact that the voiced fricatives have a strong support in the voiced sonants /j/ and /l/ and in the widespread distribution of /h/. Figure 34 shows the proportion of the paired fricatives.

### Conclusion

To close the chapter on consonants, we are going to deal with the question of which features existing in Standard Czech are acknowledged by the child in the period of the first fifty words.

From the six manners of articulation upon which the phonemically relevant distinctions of consonants in Czech are based, the child has but three, viz. occlusivity, fricativity and nasality, which are represented by these consonants: stops—fricatives—nasals. The affricates which would represent a further distinct manner, i.e. semi-occlusivity, appeared in the child's vocabulary as well, but because of their unstable phonetic realization and their restriction to the interjections only, we do

not suppose the child has mastered this distinction. The same holds good with regard to laterality. The vibrants which would represent the last distinction, viz. vibrativity, did not appear at all.

Nevertheless, even in the distinctions which we classify as acquired at this stage of speech development, certain contradictions arising from both the unequal stability of the corresponding consonantal phonemes and their varying functional load, are evident. In spite of the fact that the child knows how to pronounce the majority of the consonantal inventory, still he clings mostly to those consonants which predominate in the language and the phonetic realization of which is easier<sup>74</sup>.

**Consonant Phonemes**  
Manner of Articulation

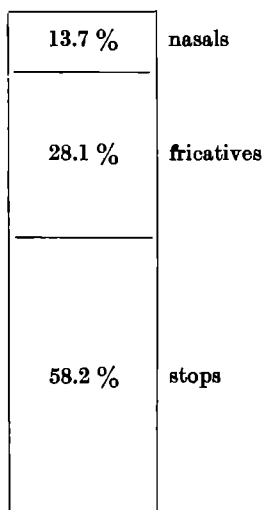


Figure 35

**Consonant Phonemes**  
Proportionate Occurrences  
of Stops and Others

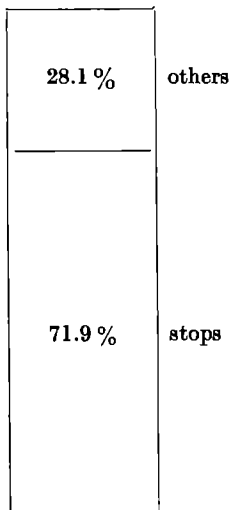


Figure 36

**Consonant Phonemes**  
Oral versus Nasal

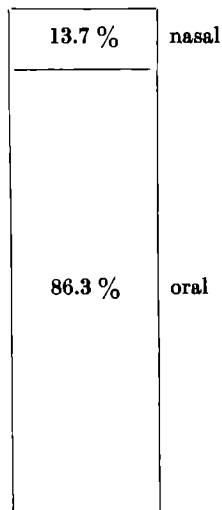


Figure 37

Viewed from the angle that in the nursery words and interjections the consonants which have the highest functional burdening are the stops and because these fulfil even the second requirement, i.e. easy phonetic realization, it is to be expected that they will come to be stabilized the earliest and will have the widest distribution.

The fricatives, on the other hand, show a more complicated development. In the early stages they are unstable and their distribution is limited. Compared to the

<sup>74</sup> Cf. A. Grégoire, *L'apprentissage*, p. 171. The author maintains here that the most frequent phoneme with his son is the vowel /a/ although he has mastered all the vocalic phonemes of his native language. Similarly, Gvozdev and Rybnikov have evidence illustrating the fact that children prefer the stops to the fricatives even in the period when they know the articulation of both these manners. — Meumann has examples where the velars are replaced by the alveolars in German-speaking children; — cf. also our Figure 51 where the most frequently distributed phonemes in the realizations of the first fifty words are the stops /p/, /t/, /k/ and the vowels /a/, /i/, /u/, i.e. those phonemes to which Jakobson ascribes the function of being the main coordinates of the phonemic system generally (cf. *Kindersprache*, p. 379).

stops, the fricatives are far more frequently dropped or replaced; further, in simplifying the consonantal clusters, the stop is—as a rule—preserved while the fricative is dissimilated. In our data, the stops constitute 58.2%, the fricatives 28.1% and the nasals 13.7%. If we classify the nasals with the stops, they make up 71.9% of all consonant occurrences. This high preponderance of stop phonemes is not surprising in the light of Jakobson's theory of the development of the phonemic system in the child and is evident in the findings of most investigators in this field, even if they did not—with the exception of R. Weir—offer statistical countings. To come back to Jakobson's theory, he establishes as the first dichotomy learned that of consonant *versus* vowel, the consonant there being a stop. Next—in Jakobson's observations—the consonantal sphere is broken up into oral *versus* nasal. Here again we could see confirmation in our data in the well-acknowledged feature of nasality and the fair distribution of the nasals in the first fifty words of the child. The proportions of the said distinctions are given in Figures 35, 36 and 37.

**Consonant Phonemes**  
Front *versus* Back

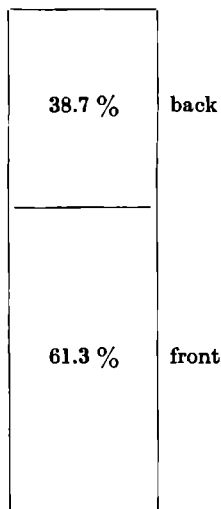


Figure 38

**Consonant Phonemes**  
Points of Articulation

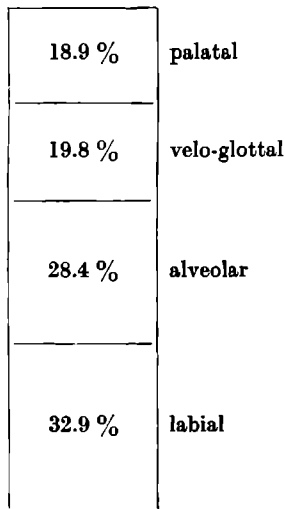
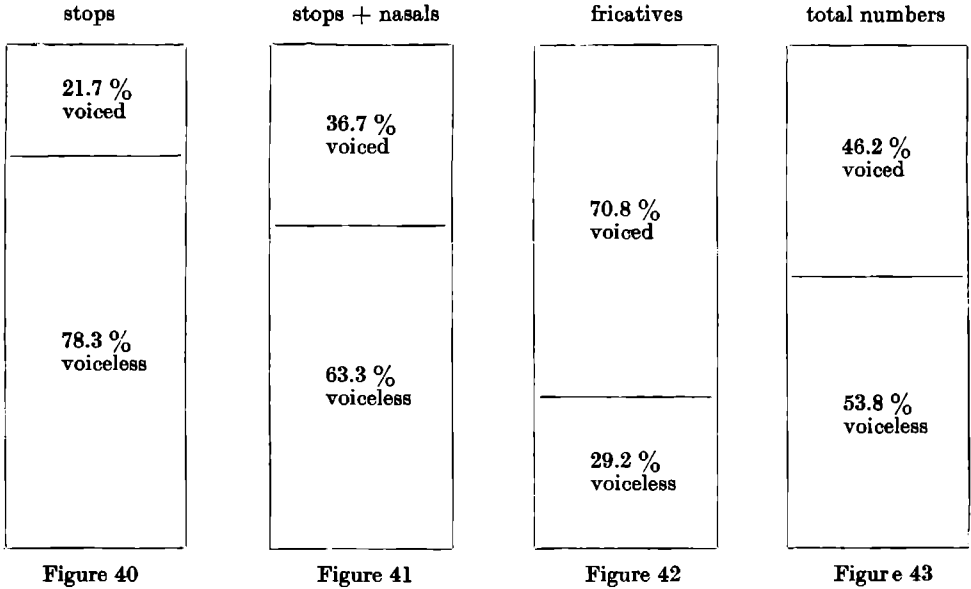


Figure 39

Now let us confront the distinctions based upon the oppositions of place of articulation. In the realizations of the first fifty words the child used these areas: labial, alveolar, palatal and velo-glottal, while the manner of articulation predictably determined a more exact point within the articulatory area. The comparison with Standard Czech shows that all the phonemically relevant distinctions in Czech consonants are present in the child as well. The consonants which are produced within these areas differ, however, both in their stability and distribution. Fairly stable are the labials and the alveolars and, with minor exceptions, also the palatals. The velars, on the other hand, have not yet been learned perfectly. Hence follows the preponderance of the front consonants compared to the back ones both in the learning

## Consonant Phonemes

### Voiceless versus Voiced



process and in the distribution, see Figures 38 and 39. Two explanations for this phenomenon are at hand: first, the selection of the vocabulary, where in the nursery forms the front consonants prevail, and second, the replacement of the velars by the alveolars in most instances at this stage of speech development<sup>75</sup>.

It is, however, the feature of voicing which shows greatest instability in the first fifty words. The voiceless consonants are far more stable as far as their phonetic realization is concerned and also their functional load is considerably higher than that in their voiced counterparts. The preponderance of the voiceless consonants over the voiced ones is striking, especially with the stop phonemes<sup>76</sup>, see Figure 40. These predominate even in the case where the number of the voiced stops is enriched by the nasals (cf. Figure 41). The fricatives, on the other hand, have the opposite proportions. It has been said before that the figures representing the voiced consonants are influenced by the existence of the sonants (cf. Figure 42 where the proportions of the voiced and voiceless fricatives are shown). The percentage of all consonantal phonemes, however, speaks once again for the voiceless consonants. The proportion

<sup>75</sup> On the priority of the front consonants compared to the back ones in the child cf. R. Jakobson, *Kindersprache*, p. 362; in dealing with the mutual relation of the phonemes he has this to say: those languages whose phonemic systems contain the velar consonants, have also the front consonants, while the opposite case has not been recorded as yet. On the other hand, there are such languages which have labials and dentals in their consonantal inventories while the corresponding velars are missing. — Also R. Weir's proportions show the high preponderance of the front consonants compared to the back ones in an English-speaking boy, cf. *Language in the Crib*, p. 55, Figure 33.

<sup>76</sup> This is in accordance with R. Weir, cf. *op. cit.* p. 55.

of the voiced and voiceless consonantal phonemes is indicated in Figure 43. The earlier stability of the voiceless consonants as well as their more frequent distribution in the first words of the child confirms the priority of the unmarked features. The marked features—the presence of voice in this case—demand a longer language learning process and are mastered at some later stages of speech development. This seems to be a plausible explanation for the widespread fluctuation of voiced and voiceless consonants, typical above all with the stop phonemes. The stop does appear and becomes stable much sooner than the fricative whose phonetic realization the child masters only gradually and whose acquirement takes place on the basis of various features for which the stops offer the fundamental presuppositions. In our data, no examples which would illustrate the fluctuation of the voiced and voiceless fricatives are at disposal. The explanation is easy: with the exception of /h/, the voiced paired members did not appear at this stage of development. In later stages when the boy had the voiced paired fricative members in his phonemic inventory, the fluctuation between voiced and voiceless fricatives existed too. Compared to the stops, however, the fluctuation with the fricatives was far less frequent and could have been explained on the basis of external factors, e.g. emphatic pronunciation, where the loss of the feature of voice is characteristic.

**Positional Distribution  
Consonant Phonemes**

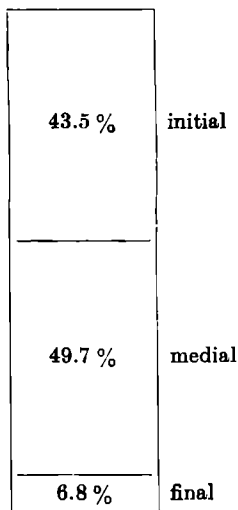


Figure 44

**Positional Distribution  
Stop Phonemes**

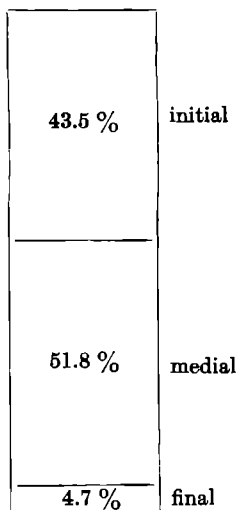


Figure 45

**Positional Distribution  
Fricative Phonemes**

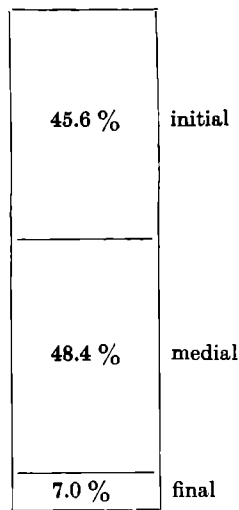


Figure 46

As far as the positional distribution is concerned, Figure 44 indicates the widest distribution of the consonantal phonemes word-medially. The medial position predominates even when we analyse the kinds of consonants separately. In spite of the fact that the stops /p/, /b/, /t/, /m/, /n/, /ŋ/ are more frequently distributed word-initially, the percentage of the three remaining stops /l/, /k/ and /d/ in the medial position is high enough to ensure the preponderance of the stop phonemes word-medially.

**Positional Distribution**  
Semi-occlusive Phonemes

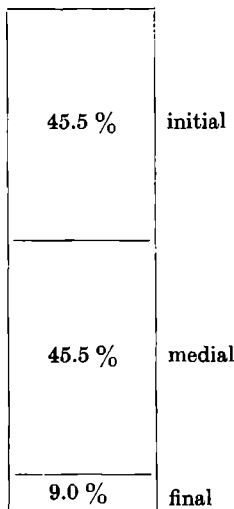


Figure 47

**Positional Distribution**  
Nasal Phonemes

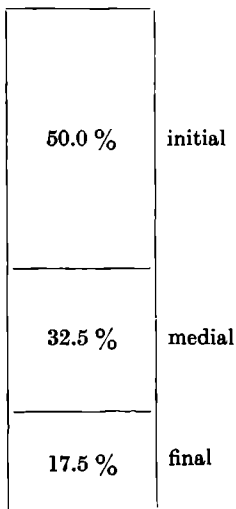


Figure 48

**Positional Distribution**  
Lateral Phonemes

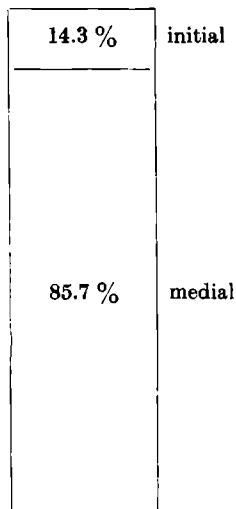


Figure 49

**Consonant Phoneme Frequencies**

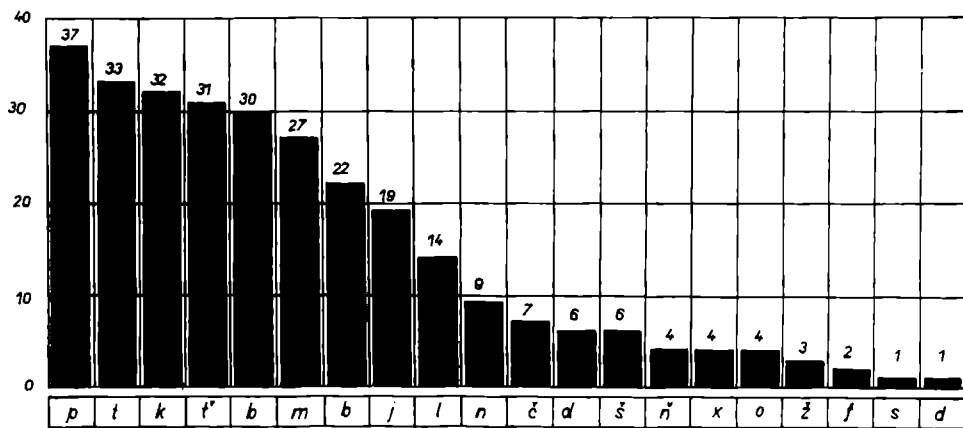


Figure 50

In the fricatives, the higher percentage for the medial position corresponds to the higher number of the separate fricative phonemes in this position; In the nasals, however, the word-initial distribution is higher than the word-medial one.—The word-initial position comes second in the frequency countings, both in consonant phonemes as a whole and in separate kinds of consonants.—The final position has by far the lowest percentage. Only the nasals are distributed in this position pro-

portionally cf. Figure 48, while with other consonants the word-final position is more or less exceptional. Figures 45—49 show the proportions of consonant occurrences in the three positions.

### Phoneme Frequencies

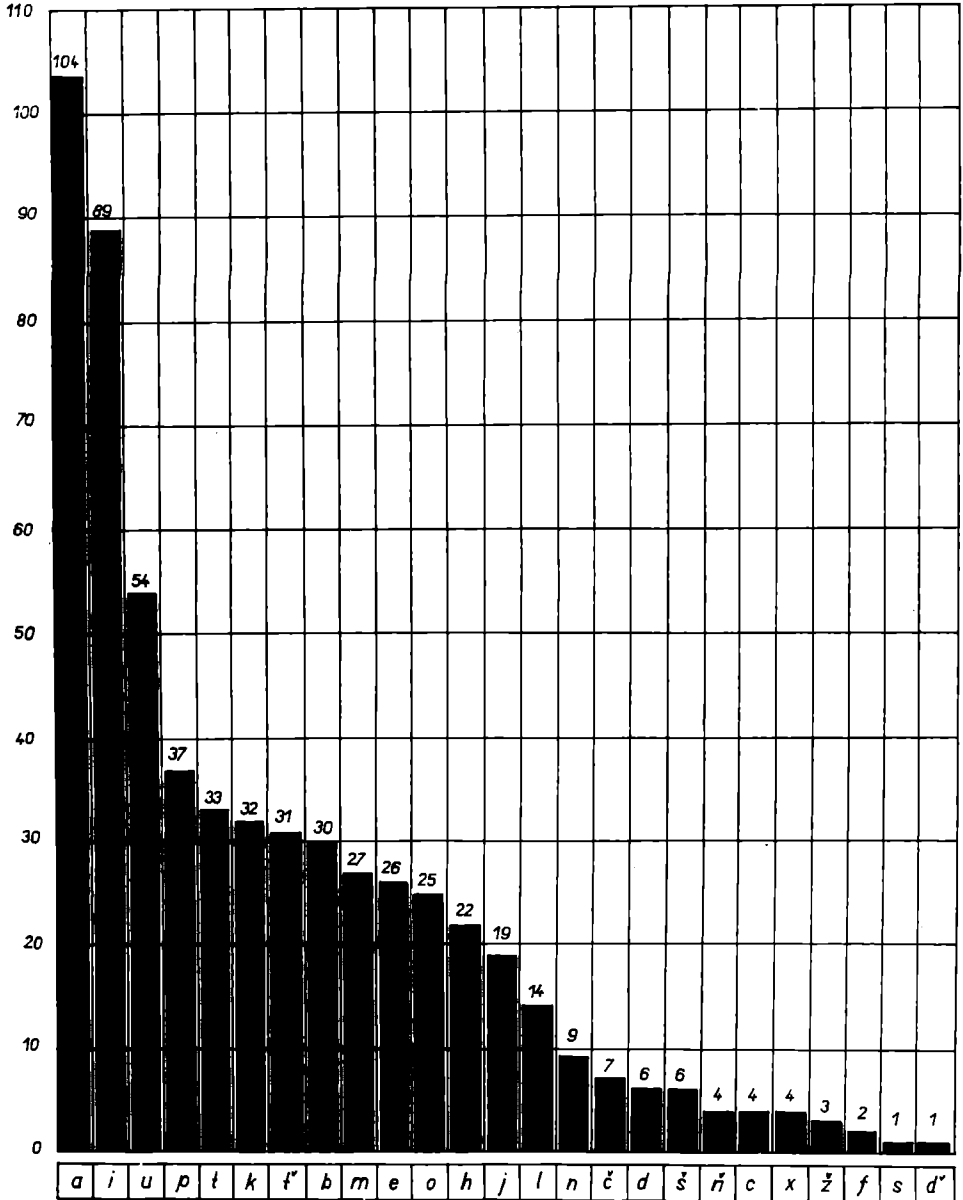


Figure 51



Finally, in Figure 50 all of the child's consonantal phonemes are listed, arranged in order of frequency of occurrence.

To summarize, we show all phonemes found in the realizations of the first fifty words in their order of frequency in Figure 51.

### PHONEMIC SHAPES OF WORDS

In terms of their length, the first fifty words can be divided into four groups: monosyllabic, disyllabic, trisyllabic and tetrasyllabic. To determine their proportionate occurrences we applied the same principles as were used for determining the phoneme frequencies.

In view of the widespread belief that the first words of the child are monosyllables<sup>77</sup> one would expect this group to have the highest proportion in the first develop-

Phonemic Length of Words

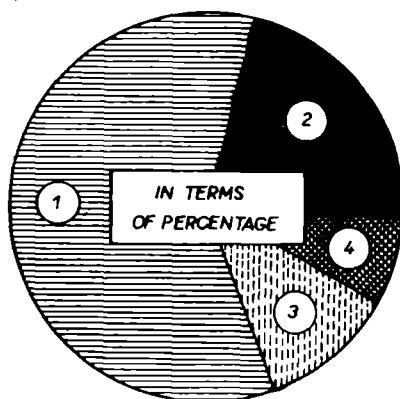


Figure 52

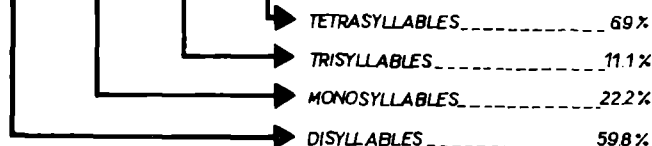


Figure 53

<sup>77</sup> On this question cf. M. Brohm, *O vývoji dětské řeči*, p. 17: "The first words of children are always monosyllabic"; — similarly J. Janko, cf. *Několik postřehů*, p. 127; Also R. Weir (cf. *Language in the Crib*, p. 64) finds the monosyllables constituting by far the largest proportion, followed by disyllables and trisyllables. She herself explains, however, that this order is not characteristic of children's language alone, but of English in general.

mental stage. It is, however, disyllabic words which account for more than half of all word occurrences in our corpus, corresponding thus to their first place in the frequency scale in Standard Czech<sup>79</sup>. — Monosyllables with their 32 occurrences in the corpus come next in order of syllabic length and are followed by trisyllables. Tetrasyllables are the least frequent words.<sup>79</sup>

The order of frequency of occurrence of the types of words are shown in Figure 52. Figure 53 indicates their proportions.

As for the shapes of words, we have analysed their consonant and vowel sequences. Figures 54—57 give their proportions.

The most frequent shape in monosyllables is the CV pattern. Next in frequency is CVC; other consonant and vowel sequences were not realized within monosyllables.

In disyllables, the shape CVCV comes first and is followed by VCV. CVCVC is the next frequent shape. Fourth comes VVCV and the fifth, sixth and seventh place is occupied by the shapes CVVCV, CVV and CC.

Trisyllables have but one shape, viz. CVCVCV. The same sequence was typical also of the tetrasyllables which contained these patterns: CVCVCVCV, CVCVCVCV and CVCVCVCV.

Of the total words the shape CV is by far the most widely distributed one. Its 254 occurrences in the realizations of the first fifty words amount to 86.9%. This high number is in close connection with the selection of the child's vocabulary. The nursery forms and interjections consist mostly of open syllables where the sequence CV is obligatory. The closed syllables had but 21 occurrences (7.2%) and their only shape was CVC. The shape V had 17 occurrences, constituting thus 5.9%.—The proportion between open and close syllables is shown in the numbers 92.8 : 7.2.

In this connection, the ratio of vowels and consonants might be shown. The vowels here slightly predominate, constituting 50.5% of the total phonemic inventory<sup>80</sup>.

It may cause surprise that the shape VC does not appear in the first fifty words of the child, as this is the most natural order of sound production and occurs with high frequency in the babbling period. Its non-existence, as well as the preponderance of the model CV in our data, might be a confirmation of Jakobson's observations. In his article *Why Mamma and Papa* (p. 541) he says the following: .. "during the babbling period, many of the uttered syllables consist of a vocalic sound succeeded by a consonantal articulation. As soon as the child moves from his babbling activities to the first acquisition of conventional speech, he at once clings to the model consonant + vowel. The sounds assume a phonemic value and thus need to be correctly identified by the listener, and since the best graspable clue in discerning consonants is their transition to the following vowels, the sequence consonant + vowel proves to be the optimal sequence and therefore it is the only universal variety of the syllable pattern"...

There are, however, children who cling to the model VC long after their babbling

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<sup>78</sup> The investigation of J. Ondráčková, cf. *O mluvním taktu v češtině*, pp. 25 ff., shows that the most frequent type of measure in Czech is disyllabic, closely followed in frequency by the trisyllabic measure.

<sup>79</sup> It might seem strange to find tetrasyllables among the first fifty words. All of them are, however, interjections of onomatopoeic character. We have mentioned before that this word category stands outside the system and is not governed by the same phonological laws. In view of this fact neither is their length surprising. — Cf. also Ohnesorg, *Fonet. studie II*, p. 63: the first words were disyllables. The longer words appeared much later. Interjections, however, were realized as polysyllables from the very beginning.

<sup>80</sup> Cf. with the ratio of vowel—consonant in Standard Czech 42.5 : 57.5.

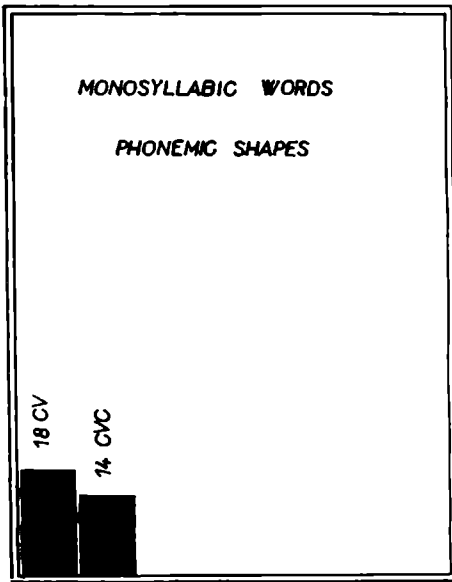


Figure 54

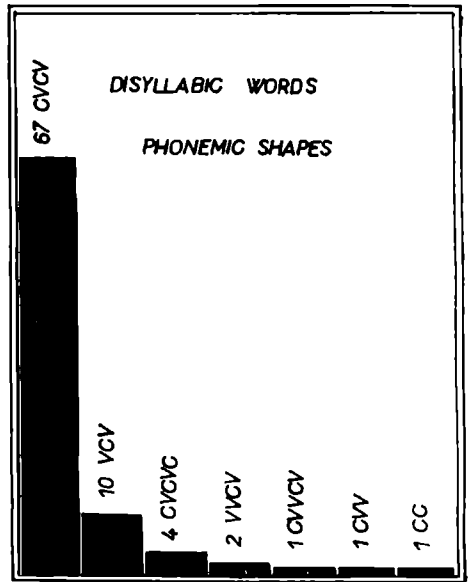


Figure 55

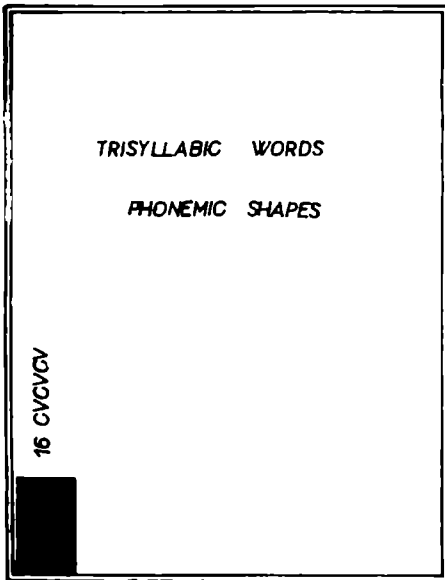


Figure 56

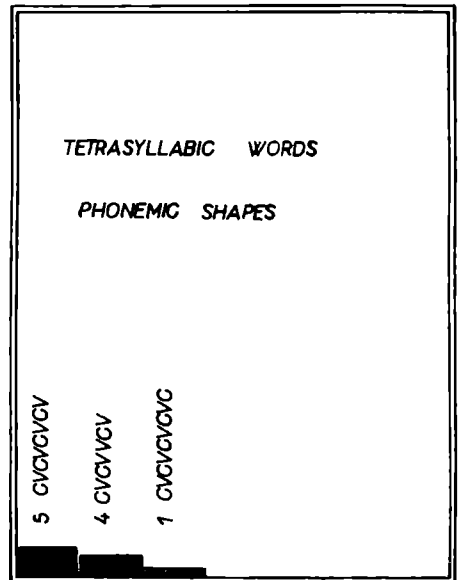


Figure 57

period is over. To illustrate this, we can quote here the speech development of another Czech-speaking boy who at the age of 2; 8, 5 had the shape VC as the most frequent one in his formations. At the age of two, his vocabulary contained but few nursery

forms, viz. *mama, tata, pápá, pá, ano, né*. From that time, however, his learning process proceeded very quickly as far as the growth of vocabulary was concerned but not so as regards the phonetic realizations of his utterances. At the same time he used various realizations of one and the same expression and very often he returned to the original primitive forms. Rather characteristic for his speech was the dropping of the initial consonant, which resulted not only in the high frequency of the VC model but also in widespread homonymity thus making his speech hardly intelligible, cf. at least a few examples: [a:t] = *hrát, bát, dát, spát*; [i:t] = *vzit, jít, mít*; [et] = *jet, led, med, hned*.

These two examples of speech developments, one of which speaks for Jakobson's opinion, the other being in contradiction to him, calls for further research in this field, especially as far as the transition from babbling to verbal behaviour is concerned. With the exception of *R. Weir* (*op. cit.* p. 65 ff.), none of the investigators paid due attention to the phonemic shapes of child words, which would, no doubt, be of great interest.

To go on with the analysis of the phonemic shapes of words in the child under observation, the *reduplication*<sup>81</sup> of the sequence CV is the most characteristic feature. To explain this we cannot but return once again to the above-quoted contribution of Jakobson; he too finds reduplication a favourite device in nursery forms, particularly in parental terms and in the early word units of infant language. This reduplication—in his opinion—may be looked upon as a compulsory process, signaling that the uttered sounds do not represent babble any more but a meaningful semantic entity. In contradistinction to the unstructured sounds of babbling exercises, the phonemes are to be recognizable, distinguishable and identifiable. In accordance with these requirements, they must be deliberately repeatable. The successive presentation of the same consonantal phonemes, repeatedly supported by the same vowel, improve their intelligibility and contribute to the correctness of the message reception.

The shape CVC, which is the only representative of the closed syllables in this period, had only 19 occurrences, all of them word-finally. In view of what has been said about the common dropping of the final consonants, the low figure for this shape is not surprising. What might be of interest here is that most of the CVC shapes contain a stop phoneme as the last component of the syllable and of these the bilabial nasal /m/ is the most frequent. The early closed syllables are thus represented by the pattern which might be called the optimal one, the open vowel being followed by the most natural complete closure, i.e. the bilabial stop.

The shape CC requires perhaps an explanation. The syllabic character has been ascribed here to the hushing sound /š/. Its usage in such a function is not excluded in interjections, especially in those of onomatopoeic origin, while in other word-categories the syllabic allophone [ʃ] does not occur in Standard Czech.

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<sup>81</sup> *Iteration* would be, in our opinion, a more suitable term for this phenomenon in child speech. The naming *reduplication* does not necessarily imply the repetition of the identical vowel with the identical consonant, while this is typical of this stage of speech development. As, however, the term reduplication seems to be generally used even in this connection (besides Jakobson cf. e.g. Brohm, *O vývoji dětské řeči*, p. 18), we adopted it as well.