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Phonology

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PHONOLOGY

VOWELS

In the realizations of the first five hundred words the following vowels build up the child's vocalic system:

	Front	Central	Back
High	/i/, /i:/		/u/, /u:/
Mid	/e/, /e:/		/o/, /o:/
Low		/a/, /a:/	

Figure 144

As the table indicates, all non-standard allophones reported in the first-fifty and first-one-hundred-word periods are absent now, illustrating thus the stabilization of the correct phonetic articulation of each of the vocalic phonemes. Similarly, the non-existence of the semi-long and extra-long variants suggests that the quantity becomes stabilized in the two members, i.e. short *versus* long.

Compared to Standard Czech, the two systems of vowels are now identical. All the vowels have the status of autonomous phonemes with one modification; /o:/ has a phonemic status only in small number of loan-words, whereas in the indigenous system of home-words it represents an expressive variant.

The following will consist of a description of each vowel phoneme in regard to its phonetic realization, relation to other phonemes and possible combinations. As before, statistics will be used to determine the functional load of vocalic phonemes, their combinations as well as their frequency in the child's vocabulary in the period of the first five hundred words.

The Short Vowel /a/

Phonetic Realization

The phonetic realization being well established in all distinctive features, the phoneme /a/ might be justly classified as a low central unrounded short vowel, with no deviations as compared to Standard pronunciation.

Distribution

In the frequency scale of vowels, /a/ preserves its first place regardless of the fact that long /a:—as an autonomous phoneme—is dealt with separately. Its 1266 occurrences in the realizations of the first five hundred words amount to 20.1% of the vocalic phonemes, and 8.7% of the total of phonemes found in the vocabulary. As regards the place of occurrence, the phoneme /a/ is not limited, being distributed word-initially, word-medially and word-finally. Of the three positions the greatest number appears for medial occurrences while the final occurrences come second in order of frequency. Word-initially then, /a/ is distributed least frequently. In view of the dislike of Czech for distribution of the vowels especially as regards /a/, /e/, /i/ in the initial position, a decreasing number was expected. Still, considerable amounts of initial occurrences do appear in instances which represent the older developmental stage, i.e. where the proper initial consonant is dropped and the medial vowel becomes thus predictably the initial one, cf. [ambatej] *hambatý*, [akukala] *zakukala*, [apešek] *chlapeček*. While in the cited examples /a/ is correct, in the following it represents a substitutive sound, cf. [akavički] *rukavičky*, [avał] *chovat*, [apak] *kdepak*, [aka:dat] *vykládat*. These forms, however, are in the minority as compared to those whose realizations are identical or at least approximate to their correlates in Standard Czech pronunciation, cf. [akavički]—[lukavički] *rukavičky*, [avał]—[zovat] *chovat*, [apak]—[depak]—[gdepak] *kdepak*, [aka:dat]—[vikla:dat] *vykládat*. The latter forms are more frequent and are used as the basis for further derivations. In its proper initial occurrences, /a/ appears only in two items, of which the second is an interjection, cf. [ano] and [au, auvej]. More frequent, however, is the initial /a/ in loan-words, e.g. *auto, autobus, ahoj, aparát, Asta*, which the boy took over from his linguistic environment and accommodated in a form corresponding to his phonetic abilities and grammatical knowledge, cf. [axoj, ahoj, ahojte] *ahoj!*, [auti:ček, auta:k, autili:ňko] *auto, autičko*, [bus, busek, autobus, autobusek] *autobus*, [apala:tek cvak] *aparát*.

Figure 145 shows the occurrences of /a/ in the three positions.

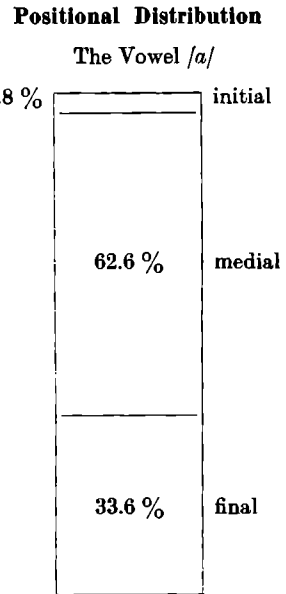


Figure 145

The Long Vowel /a:|

Phonetic Realization

Like the short /a/, so too its long counterpart /a:| has attained the correct realization in being stabilized as a low central unrounded long vowel. Compared to short /a/, the long /a:| is slightly raised.

Distribution

In frequency the scale of vowels, /a:| occupies the first place among long phonemes and the sixth among all vocalic phonemes. Its 537 occurrences in the realizations of

the first five hundred words amount to 8.5% of the vocalic phonemes and 3.7% of all phonemes counted.

As regards the place of occurrence, /a:/ is restricted to medial and final positions. Of these two, the medial is far more frequent. Most of the medial occurrences of /a:/ appear in the 1st person sg. of the verbs. The ending [-a:m], being highly productive in Standard Czech, is the more widespread in the child's idiolect, due to his analogous usage of this ending in the majority of the existing verbs; thus alongside [ma:m] *mám*, [beza:m] *béhám*, [pi:va:m] *zpívám* there arose and found their foothold in the child's vocabulary such instances as [spa:m] *spím*, [oblacova:m] *obracím*, [va:za:m] *váží*, [utesa:m] *učešu* etc. Due to perseveration, these forms were used long after the boy was fully aware of the correct ones, though self-correction followed in most instances. The same ending was employed when the boy constructed verbs on the basis of former substantives. Though having no corresponding equivalents in Standard Czech, verbal forms such as [vinočňi:čkova:m se] (I am going to use the chamber-pot), [vopapučkova:m] (I am going to put on my slippers), [vočepiškova:m] (I am going to put on my cap) were frequent in the child.

Positional Distribution

The Vowel /a:/

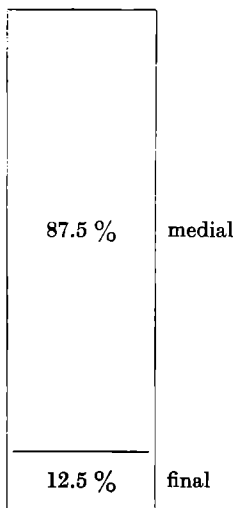


Figure 146

Vowel Phonemes

Short versus Long

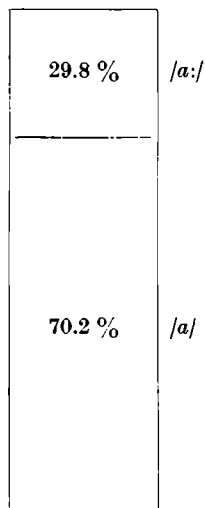


Figure 147

Another phenomenon which the boy found attractive is the suffix [-a:k]. The analogy with [daleba:k] *darebák* (a scoundrel) undoubtedly induced him to add it to the substantives in order to achieve a pejorative affect both in home- and loan-words. A few examples follow; [ježa:k] *ježek*, [ži:žala:k] *žížala*, [žilafa:k] *žírafa*, [žaba:k] *žába*, [pa:va:k] *páv*, [lva:k] *lev*, [pi:pa:k] *pipínka*, [či:čak] *kočka*, [špinava:k] *špinavec*; [e:la:k] *aero*, [auta:k] *auto*.

Furthermore, the phoneme /a:/ helped the boy to differentiate the expressions which, due to cluster simplification, were homonymic in older developmental stages, cf. [maso]—[ma:so] *maso*—*máslo*.

As for the final occurrences of /a:/, most of them are correct, cf. [bakana:] *bakaná*, [čelvena:] *červená*, [čelna:] *černá*, [heska:] *hezka*, [mokla:] *mokrá*. The occurrences in 3rd person singular are either correct, cf. [hača:] *hačá*, [haja:] *hajá*, [svola:va:] *svolává*, [tuka:] *tuká*, or analogous [ložbi:va:] *rozbíjí*, [kutulula:] *kotouli*. Figure 146 indicates the proportionate occurrences of /a:/ in the two positions. In Figure 147 the ratio of the phonemes /a/ and /a:/ in regard to their frequency in the vocabulary of five hundred words is shown. High preponderance of the short member as compared to the long one brings further confirmation to the fact that the unmarked features are more frequent in children, just as they are in languages in general.

The Short Vowel /e/

Phonetic Realization

After a more complicated learning process the phonetic realization of /e/ has become stabilized and the phoneme has attained the characteristics of a mid front unrounded short vowel, corresponding to its Standard Czech model both in production and in auditory impression. All the non-Standard allophones have gradually disappeared from the child's phonemic repertory with the refinement of the distinctive features.

Distribution

In the frequency scale of vowels, /e/ occupies the second highest place. Its 1261 occurrences in the realizations of the first five hundred words account for 20.0% of the vocalic phonemes and 8.7% of the total of phonemes found in the child's vocabulary. In contradiction to both previous periods the phoneme /e/ came to be widely distributed in this developmental stage, as the change in the frequency scale clearly indicates. Two explanations can be offered for this finding; first, the child has mastered the phonetic realization of this mid front unrounded vowel phoneme and, concomitantly, no substitute sound any longer replaces it; second, the phoneme /e/ had a minimal functional load in nursery forms and interjections. In view of the fact that these two types of words composed the majority of the child's vocabulary in the two first stages, the low distribution of /e/ was then predictable. On the contrary, /e/ is the most widely distributed vocalic phoneme in the word-stock of Czech. As the structure of the child's vocabulary approximates to that of Standard Czech in this developmental stage, the high frequency of /e/ no doubt exerts its influence on the statistical findings on vowels.

As regards the place of occurrence, the phoneme /e/ is not limited, and occurs word-medially, word-finally and word-initially, in this order of frequency. As with /a/, so too with /e/, the frequency of the three positions is very unbalanced. While the medial position strikingly predominates and accounts for 81.0%, the initial has

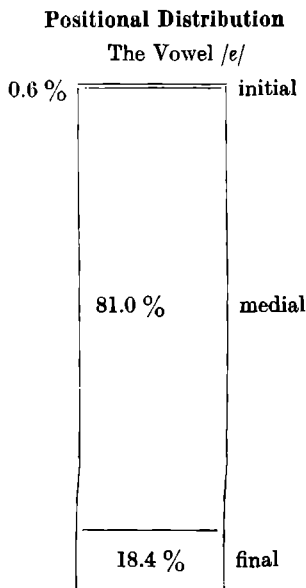


Figure 148

but 0.6% of the total occurrences. For an explanation of this low number in the initial position, the dislike of Czech to distributing /e/ word-initially is to be recalled here once again. Moreover, of the eight initial occurrences only three represent the proper initial position (the various realizations of the loan-word *elektrika*, cf. [elika, eletrika, eletrika]). The remaining five, on the other hand, are the manifestation of a less mature stage of speech development where the proper initial consonant is dropped, cf. [ebi:ček, ebi:šek] *chlebiček*, [ele, este, ešte] *ještě*. The growth of the occurrences in the medial position and, concomitantly, the decrease in the final position, is in accordance with the fact that the final consonants are being realized in most instances. Thus the former final occurrences of /e/ are now medial ones, cf. [kibi:če] > [kibi:ček], [beja:ne] > [beja:nek]. Furthermore, the decreasing number of the interjections, where /e/, both in short and long allophone, has wide occurrence word-finally, influences negatively the frequency counts of the final /e/. Figure 148 gives the proportion of occurrences of /e/.

The Long Vowel /e:/

Phonetic Realization

Like the short /e/, so its the long counterpart /e:/ is fairly stable and, as far as phonetic realization is concerned, corresponds to the characteristics of a mid front unrounded long vowel. Compared to its short counterpart, the phoneme /e:/ is roughly twice as long and slightly raised.

Positional Distribution

The Vowel /e:/

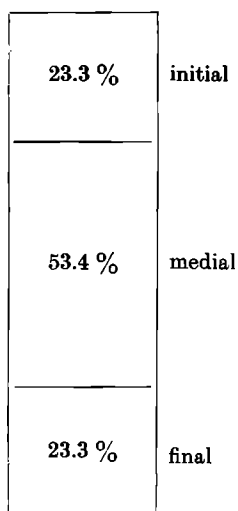


Figure 149

Vowel Phonemes

Short versus Long

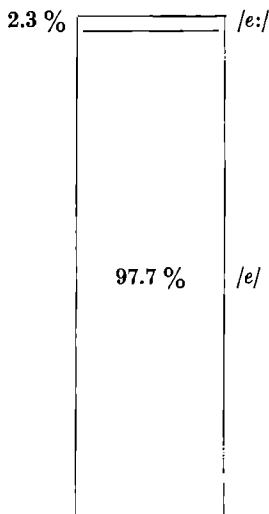


Figure 150

Distribution

In the frequency scale of vowels, /e:/ occupies the fifth place among long phonemes and the tenth among all vocalic phonemes. Its 30 occurrences in the realizations of

the first five hundred words account for 0.4% of the vocalic phonemes and 0.2% of the total of phonemes found in the child's vocabulary. In view of the fact that /e:/ has a minimal functional yield in Czech, these low figures are not surprising.

As for the place of occurrence, /e:/ is not limited, and occurs in the initial, medial and final positions. Compared with the distribution of other vocalic phonemes, the distribution of /e:/ is more evenly balanced, as Figure 149 indicates. The high percentage in the initial position, however, is due to the child's predilection for the item *aero* using it in various forms, cf. [e:lo, e:l'o, e:la:k, e:lečko, e:lopa:n, e:pola:n, e:lopla:n]. In the medial position, the phoneme /e:/ appears in the place of the proper /e/ due to the supplementary lengthening, cf. [veve:ka] *veverka*, [pe:sek] *pejssek*, [be:je] *brejle*, [de:de] *nejde*. The lengthening of /e/ in the item [ne:ni] *neni*, on the other hand, is the result of the emotional connotation attached to this expression. As for the final occurrences of /e:/, most of them are correct and appear especially in onomatopoeia, e.g. [me:], [be:], [be:be:]. Its appearance in the loan-word [kafe:] *kafé* needs no comment. Its long form instead of the correct short form in the item [ole:] *olej* is to be explained as the result of supplementary lengthening for the loss of the proper final consonant.

In Figure 150 the ratio of the short and long /e/ is indicated. The preponderance of the short vowel, noticed already in the relation /a/ : /a:/, is the more striking in the relation of /e/ : /e:/. In view of the fact that short /e/ is found second in the frequency scale of vocalic phonemes while the difference between this second position and the leading position is the slightest possible, (cf. 20.1% attributed to /a/ and 20.0% attributed to /e/), and that long /e:/ occupies the last place in the scale, this finding is not surprising. Besides, the high and low functional loads for /e/ and /e:/ respectively in Standard Czech presents a similar picture.

The Short Vowel /i/

Phonetic Realization

The phonetic realization of /i/ is firmly established in all distinctive features. The phoneme thus corresponds in its characteristics of being a high front unrounded short vowel to that of Standard Czech.

Distribution

In the frequency scale of vowels, /i/ occupies the fourth place. Its 975 occurrences in the realizations of the first five hundred words account for 15.5% of the vocalic phonemes and 6.7% of the total of phonemes found in the child's vocabulary. Compared to the previous stages, the frequency of /i/ is decreasing. This is in accordance with the growth of vocabulary, where in the newly entered words the child is not satisfied with the fundamental vowels /a/, /i/, /u/ as before, while on the other hand, all Czech vocalic phonemes are distributed and their functional load corresponds—to a greater or lesser extent—to that reported by Mazlová and Kučera. Though, due to the differing analysis the data are not truly comparable, it is rather interesting to find the identical, i.e. the fourth place of /i/ in the frequency scales of vocalic phonemes in ours, Mazlová's, Kučera's and Vachek's statistics. Also the fact that the long counterpart /i:/, having achieved its contrastive function, is dealt with separately, exerts a negative influence on the statistical findings for /i/.

As regards the place of occurrences, the phoneme /i/ is not limited and occurs word-initially, word-medially and word-finally. The distribution in the three positions

is nevertheless very uneven and not always correct. As in most vocalic phonemes, so too in /i/, the greater number appears for the medial and final positions, while the initial position displays by far the lowest percentage. The fact that the Czech fundamental stock of words has only very few instances beginning in /i/ was mentioned in connection with the phoneme /a/. None of these instances, however, appears in the child's vocabulary in this period and all the initial occurrences of /i/ here are due to the omission of the proper initial consonant which has not yet found a firm foothold in the child's pronunciation. The following are some examples; [ibafnul] *vybafnul*, [ilezeme] *vylezeme*, [iči:sti:me] *vyčistíme*, [ibaca:me] *nabacáme*, [ipil] *vypil*, [ibumali] *vybumbali*, [iba] *ryba*, [ibiška] *rybička*, [iška] *liška*.

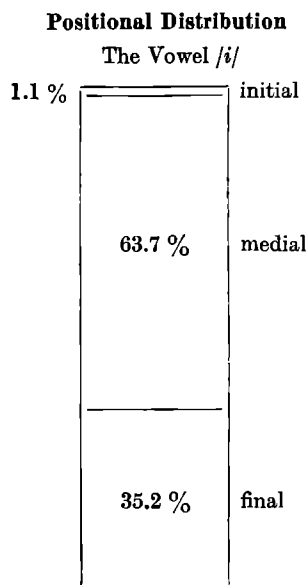


Figure 151

In the medial position, on the other hand, /i/ is used properly in most of the observed occurrences, cf. [mišička] *myšička*, [pšiklítej] *přikrytý*, [pababiška] *prababička*, [ďivokej] *divoký*, [nezlobit] *nezlobit*. A few instances where short medial /i/ replaces the proper long one will be dealt with in the conclusive paragraph on /i:/.

A few comments are perhaps required in connection with the comparatively high frequency of /i/ word-finally. The fact that -i is a highly productive ending in Czech exerts, undoubtedly, its influence on statistical findings. From its wide usage in this position, let us mention here at least the nominative and accusative plural, i.e. the cases which are most frequent in the child, and the plural forms of the preterite—another category widely used by the child, cf. [knedli:ki] *knedlíky*, [peňi:ski] *penízky*, [švestički] *švestičky*, [lučički] *ručičky*, [lukavički] *rukavičky*: [papali] *papali*, [hačali] *hačali*, [spinkali] *spinkali*, [meli] *měli* etc. Due to the high productivity, other plural forms were constructed analogously, cf. [očički] *očička*, [kvitički] *kvítečka*, [ušički] *ouška*.

The Long Vowel /i:/

Phonetic Realization

Like the short /i/, the long /i:/ too has reached correct realization in being stabilized as a high front unrounded long vowel. Compared to short /i/, the long /i:/ has roughly double the duration. The tendency not to preserve this relation, however, is shown in the shortening of the properly long member. In quality, the long /i:/ is slightly raised as compared to the short /i/.

Distribution

In the frequency scale of vowels, /i:/ occupies the second highest place among long vowels and the seventh among all vocalic phonemes. Its 478 occurrences in the realizations of the first five hundred words account for 7.6% of the vocalic phonemes and 3.3% of the total of phonemes found in the child's vocabulary. These comparatively high figures are in accordance with its wide distribution in Czech.

As far as the place of occurrence is concerned, the phoneme /i:/ is not limited and occurred in the initial, medial and final positions. There are, however, large proportions in the three positions. While the medial position amounts to 80.5%, the five initial occurrences represent only 1.1% of the total of occurrences of /i:/. Moreover, none of the five word-initial occurrences is correct. The list shows that the genuine medial -i:- appears in the onset because the proper initial consonant was dropped, cf. [i:ček] *Jiříček*, [i:ski:, i:nski:] *rýnský*, [i:stek] *lístek*, [i:žala] *žížala*.

Positional Distribution
The Vowel /i:/

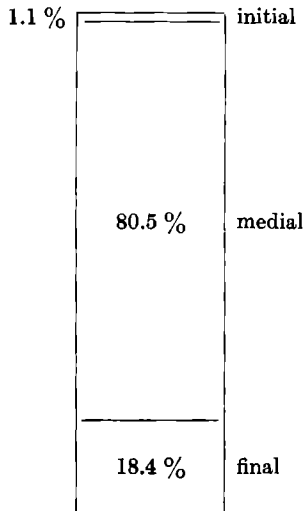


Figure 152

Vowel Phonemes
Short versus Long

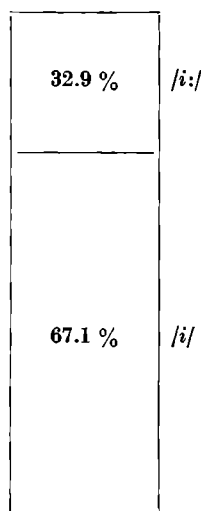


Figure 153

As for the medial position, most of the occurrences are correct. Of the few exceptions, two will be mentioned here; first, the medial -i:- appears in [pi:sat] *psát* in the function of a svarabhakti vowel which is employed here to avoid the difficult consonantal cluster [ps] (cf. here also other examples where this cluster was avoided or underwent metathesis; [pesa] *psa*, [kaspički] *kapsičky*). Second, the medial -i:- replaces the correct -e:- in the various realizations of the item *mléko*, cf. [mi:ško], [mi:čko], [mli:ko]. Since, however, the colloquial form [mli:ko] was used frequently in the boy's surroundings, he probably chose this form for imitation.

A similar problem concerns the final /i:/ in the ending of adjectives. The child used the ending [-i:] in adjectives of masculine and neuter gender, cf. [hodni: xapeček] *hodný chlapeček*—[čeveni: jabi:ško] *červené jablíčko*. While in the masculine gender the ending [-i:] is the standard form, it is colloquial in the neuter gender. The question arises as to whether the child imitates the colloquial pronunciation in the neuter and clings to the standard model in the masculine or whether /i:/ in the neuter functions as a substitute for the proper standard /e:/. In view of the fact that all vocalic phonemes are fairly stable and fluctuation is no longer common at this stage of speech development, the former suggestion seems more probable.

In Figure 152 the proportionate occurrences of /i:/ in the three positions are indicated. Figure 153 shows the ratio of the short and long /i/. In distinction to all other vocalic phonemes, the long /i:/ is distributed more frequently (cf. its 32.9%). This, however, corresponds to the wide distribution of this vowel phoneme in Czech.

As shown in the paragraphs on distribution, both the vowel phonemes /i/ and /i:/ are realized in their proper places, with minor exceptions. Here we are dealing with a few of such; the long /i:/ is used instead of the proper short /i/ in [ji:ka] *Jirka*, [si:ka] *sírka*. Supplementary lengthening is perhaps the most plausible explanation for these instances. Further, the fluctuation between [i], [i.] and [i:] occurs in a few polysyllabic words, cf. [piseček]—[pi:seček], [písať]—[pi:sat], [kvítečko]—[kfi:tek], [neudužim]—[nevuduži.m]. As the shortening of the high vowels appears in Colloquial Czech and as the child was exposed to the influence of both Colloquial and Standard pronunciation, he probably imitated both the models in his idiolect.

The emphatically lengthened vowels in the last syllables which occurred with high frequency especially in the interjections of onomatopoeic origin in the first two developmental stages, gradually disappeared. There are, however, examples illustrating the opposite process, i.e. the shortening of the former extra-long vowels. This quantitative reduction is, in some cases, accompanied by haplology, cf. the original form [kikiliki:] with the realizations common in this developmental stage—[kikiliki:], [kikilí], [kikilik]. Similarly, [kokokokoda::k]—[kokokoda:k]—[kokoda:k]—[kokodak]; [me:me:me::]—[me:me:]—[mek]; [be:be:be::]—[be:be]—[bek]. To explain this change on the ground of preference of short, i.e. easier and therefore better mastered vowels or on the ground of a tendency to shorten the long words seems insufficient here. The child articulates the long vowels with ease in other instances regardless of the word position. Similarly, the syllabic length of words seems to cause no trouble to the child as he realizes with success even penta- and hexaxyllables of which some are his own formations (e.g. the above cited [vočepičkujeme] [vinočňi:čkova:m]). Another, and—in our opinion—more probable, explanation might be offered here: in the first developmental stages of language development the child concentrates on the phonetic aspect of the word and reproduces, according to his abilities, more or less precisely the models given him for imitation. As the coda of onomatopoeia is usually long, the child echoes an extra-long vowel in this position. This developmental stage is, however, superseded by one in which the child appears to be satisfied with his phonetic progress and concentrates on the functional aspect and on the mutual relation of words. Onomatopoeia and interjections lose their former function—that of naming the objects—and come to represent an expressive element. In this function then, the interjections help the child to identify the objects on the ground of their most characteristic property or action. A few examples follow for illustration: [koto:tek kikilik] *kohoutek kykyrykjý*, [kavička bu:], *kravička bú*, [slepička kokkodak] *slepička kokodák*, [auto tudu:] *auto tudú*, [apala: cvak] *aparát cvak*, [zacinknu cizk] *zacinkám cibilink*, [fonova:m halo:] *telefonuji haló*.

The Short Vowel /o/

Phonetic Realization

Parallel to the front mid unrounded short vowel phoneme /e/, the back mid rounded short vowel phoneme /o/ becomes stabilized in the child's idiolect and no deviations either in production or in auditory impression are noticeable at this stage of speech

development. The non-Standard Czech allophones, frequent in this phoneme in the previous stages, gradually disappeared from the child's vocalic inventory.

Distribution

In the frequency scale of vowels, /o/ occupies the third highest place. Its 1013 occurrences in the realizations of the first five hundred words account for 16.1% of the vocalic phonemes and 6.9% of the total of phonemes found in the child's vocabulary. Compared to the previous stages, the figures are higher, thus illustrating that the occurrence of /o/ increases with the growth of vocabulary. While this increase did not show in the frequency scale of the second developmental stage as compared to the first, it does show in the third developmental stage, where /o/ appears in the third instead of the fifth place in order of frequency. To explain this change the different distributional properties should be mentioned here; while /o/ has minimal functional load in nursery forms and interjections, it is the second most widely distributed vocalic phoneme in the Czech word-stock. In view of the fact that in the first developmental stage the nursery forms and interjections form the greatest part of the child's vocabulary, low figures for /o/ were expected; and so, on the other hand, high figures were anticipated for /o/ in the third developmental stage, where the interjections and nursery forms are giving way to the common Czech word-stock.

As far as the place of occurrence is concerned, no distributional restriction affects the phoneme /o/ and all the three possible positions are represented in the realizations of the first five hundred words. As with other vocalic phonemes, so too with /o/ the highest figures appear for the medial position. The final and the initial positions show progressively lower numbers.

Though low, the initial position of /o/ reports the second highest frequency⁹⁹ among the vocalic phonemes, cf. 7.7% /o/, 3.8% /a/, 0.6% /e/, 1.1% /i/, 8.5% /u/. Furthermore, all the occurrences of initial /o/ are correct and have their correlates in the common wordstock of Czech. Some examples follow; [oloupani.] *oloupaný*, [olizuje] *olizuje*, [okno, okínko] *okno, okýnko*, [oba:zek] *obrázek*, [olej] *olej* etc. However frequent such instances are, they would have been more frequent still had it not been for the fact that the hiatic consonant [v] appears in the child's idiolect. In accordance with the colloquial usage, the child has [v] even in such cases where there is no hiatus to abolish, cf. [ten voblázek] *ten obrázek*, [ma:m voloupanej] *mám oloupaný*, [mema:m volizuvat] *nemám olizovat*, [podej volej] *podej olej*. Of the exceptional /o/ occurrences word-initially three were recorded, viz. [o] *loď*, [olčička] *holčička*, [oda] *voda*. As their

Positional Distribution

The Vowel /o/	
7.7 %	initial
68.6 %	medial
23.7 %	final

Figure 154

⁹⁹ This phenomenon gives supporting evidence for Vachek's findings that the vowels /o/, /u/, /u:/ are more frequent in initial position as compared to /a/, /e/, /i/. (Cf. *Fonologie lexika*, p. 399).

standard equivalents show, all of them are the representatives of the older developmental stage where the proper initial consonant was dropped.

As for the medial position of /o/, most of the occurrences are correct, cf. [*balonek*] *balonek*, [*botička*] *botička*, [*staji:m*] *stajím*, [*doblej*] *dobrý* etc. Among the exceptions are those instances where the genuine initial /o/ becomes a medial due to the child's introducing the prothetic [v], as illustrated in the above-cited examples. Sound assimilation, on the other hand, accounts for the following items; [*koločko*] *kolečko*, [*ndslonou*] *na shledanou*.

Similarly, the majority of the final occurrences of /o/ are correct. Its appearance in the diminutive suffix of the neuter gender accounts for most of the cases, cf. [*tela:tko*, *tela:tečko*] *telátko*, [*pasa:tko*] *prasátko*, [*mli:čko*] *mléčko*, [*šeli:čko*] *čeličko*, [*kafi:čko*] *kafičko*. The pronouns *kdo*, *co*, *to*, *toto* represent another frequent category which exerts its influence on the statistics of final /o/. Of the exceptional instances, the realization of the undeclinable possessive adjectives ending in *-ovo* is of interest, cf. [*babičkovu*] instead of the correct *babiččin*, [*maminěkovu*] instead of *maminčin*, [*ta:tovo*] instead of *tátův*. Such formations are not absent from Czech but appear in South- and West-Bohemian dialects. As the child never met with any speaker from these localities and had thus no similar models for imitating, their appearance in his idiolect cannot but represent his own experiments in employing arbitrary derivative suffixes and endings to the common nouns. As with many alien sound differences, so too this alien grammatical difference found a firm foothold in the child's idiolect and was preserved and used as a parallel long after the child had mastered the duly inflected forms of possessive adjectives, cf. [*babičkovu boti*]—[*babičini boti*] *babiččiny boty*, [*maminěkovu taška*]—[*maminčina taška*] *maminčina taška*.¹⁰⁰

The Long Vowel /o:|

Phonetic Realization

Like the short /o/, the long /o:| too has been mastered in all distinctive features at this stage of speech development. Compared to its short counterpart, the long /o:| is roughly twice as long and, as concerns the quality, slightly raised. In its characteristics as a slightly raised mid back rounded long vowel the phoneme /o:| fully corresponds to its correlate in Standard Czech pronunciation.

Distribution

In the frequency scale of vowels, /o:| occupies the fourth place among long vowels and the ninth among all vocalic phonemes. Its 41 occurrences in the realizations of the first five hundred words account for 0.6% of the vocalic phonemes and 0.3% of the total of phonemes found in the child's vocabulary.

As regards the place of occurrence, /o:| is not limited and appears in medial, final and initial positions, in this order of frequency. However rare, this vowel performs several functions in the child's idiolect, occurring as:

1. expressive variant of the phoneme /o/, e.g. [*pozo:l*] *pozor*;
2. a substitute for the proper diphthong [ou], e.g. [*koto:tek*] *kohoutek*, [*o:ško*] *ouško*;
3. a substitute for the loss of a consonant, e.g. [*moto:ku*] *motorku*;

¹⁰⁰ On this question, cf. J. Vachek, *K problematice českých posesivních adjektiv*, p. 171—189.

4. a vocalic phoneme in a few loan-words, e.g. [glamofo:n] *gramofon*, [telefo:n] *telefon*, [halo:], *haló*, [tlakto:l] *traktor*.

The quoted examples illustrate that, with the exception of loan-words, all occurrences of [o:] are incorrect and have no equivalents in Standard Czech. As the loan-words where /o:/ has a phonemic status are in a minority compared to home-words, and as in all home-words [o:] fluctuates with [o] and [ou], only the allophonic status can be attributed to this vowel at this stage of speech development.

Positional Distribution
The Vowel /o:/

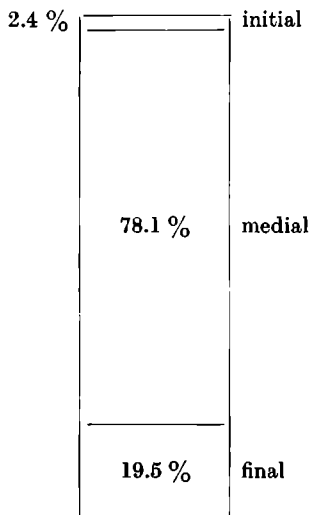


Figure 155

Vowel Phonemes
Short versus Long

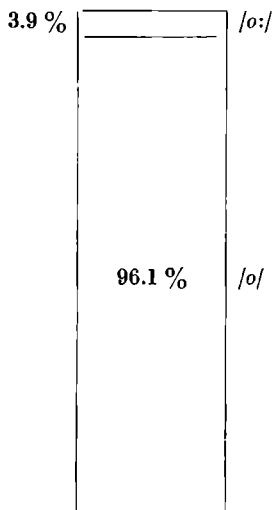


Figure 156

In Figure 155 the proportionate occurrences of [o:] are indicated. Figure 156 shows the ratio of the two allophones of the phoneme /o/. The high preponderance of the short member compared to the long is evident. When taking into consideration that, of the 41 occurrences of [o:], 18 are replacing the proper diphthong [ou], i.e. the sequence of two short vowels, the figures representing the short member are still higher, as the following ratio illustrates 97.8% : 2.2%.

The Short Vowel /u/

Phonetic Realization

The phonetic realization being firmly stable in all distinctive features, the phoneme /u/ can be justly classed as a high back rounded short vowel, with no deviations as compared to Standard Czech pronunciation.

Distribution

In the frequency scale of vowels, /u/ occupied the fifth place, i.e. the last one as far as the short vocalic phonemes are concerned. Its 650 occurrences in the realiza-

tions of the first five hundred words account for 10.3% of the vocalic phonemes and 4.5% of the total of phonemes found in the child's vocabulary. Compared to the previous stages, the frequency of /u/ is gradually decreasing, which shows even in the frequency scale. The reason is similar to that given in connection with the decrease of /i/. The fundamental vocalic triangle is enriched with two other vocalic phonemes and the functional load of each of the phonemes approximates to that of Standard Czech. In view of the fact that /u/ has the lowest functional load in the common Czech word-stock, and is slightly higher only in onomatopoeia, its decrease in the child's idiolect is to be expected parallel to the growth of vocabulary.

Positional Distribution

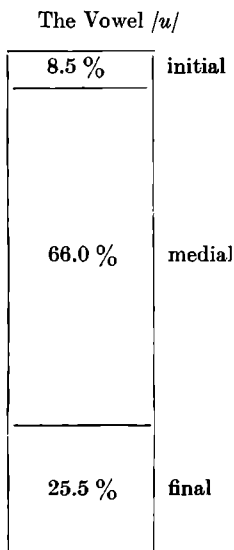


Figure 157

As for the place of occurrence, /u/ is not limited and occurs in the three positions in this order of frequency: medial—final—initial. Though the order is identical with all vocalic phonemes, the figures relate closely only to the phoneme /o/, especially as far as the initial position is concerned. While the initial /o/ was reported second in the frequency scale of vowels in initial positions, the phoneme /u/ comes as the first. In accordance with Czech, /u/ together with /o/ account for most of the vocalic occurrences word-initially in the child's vocabulary. Similarly to /o/, the occurrences of /u/ in this position are also correct and all items containing /u-/ have equivalents in Standard Czech pronunciation. A few examples follow for illustration; [utika:m] *utikám*, [umolilo] *ulomilo se*, [uti:t] *utřít*, [umazanej] *umazaný*. In distinction to /o/, no prothetic or hiatic consonant appears in connection with initial /u/.

Also in medial and final positions /u/ has correct occurrences, cf. [plavu] *plavu*, [vilezu] *vylezu*, [mukičku] *mrkvičku*; [luka:vek] *rukávek*, [buba:k] *bubák*, [dudek] *dudek*. The few exceptions are due either to sound assimilation, e.g. [dukuju, duju:, ukuju] *děkuji* or to analogy, e.g. [naba:enu] *nabacám*, [kašu] *kaši*. An older developmental stage is reflected in the forms [puši:] and [mukičku] compared with the newer [plši:] *prší* and [mlkef] *mrkev, mrkvička*.

Figure 157 shows the proportionate occurrences of /u/ in the initial, medial and final position.

The Long Vowel /u: /

Phonetic Realization

Like the phoneme /u/, its long counterpart /u:/ too has reached the correct realization in being stabilized as a high back rounded long vowel. Compared to the short /u/ the long vowel has roughly double the duration. As in the high front unrounded vowel phoneme /i/ so too in /u:/ the tendency not to preserve this ratio shows mostly in the polysyllables. The emphatically lengthened allophones gradually disappeared even in interjections and so did the geminated vowels which occurred in the previous stage in place of the sequence of a long vowel + consonant cluster, cf. [bambu*ki] *brambůrky*. As for quality, the long /u:/ is slightly raised as compared to short /u/.

Distribution

In the frequency scale of vowels /u:/ occupies the third highest place among long vowels and the eighth among all vocalic phonemes. Its 56 occurrences in the realizations of the first five hundred words account for 0.9% of the vocalic phonemes and 0.4% of the total of phonemes found in the child's vocabulary. These comparatively low figures were expected in connection with the low distribution of this phoneme in the common word-stock of Czech and with the decrease of interjections in the child's vocabulary. Unlike the case in Czech, however, the phoneme /u:/ is here restricted in place of occurrence. No data representing its initial occurrence were recorded in the realizations of the first five hundred words, though such do appear in the Czech word-stock. Of the remaining two positions, the medial is the more frequent, cf. Figure 158. The following are some of examples; [mu:že] *může*, [nemu:že] *nemůže*, [mu:j] *můj*, [blambu:lki] *brambůrky*, [domu:] *domů*, [dolu:] *dolů*. As the Standard Czech equivalents indicate, all the occurrences of /u:/ are proper in the child's idiolect.

The ratio between the short and long /u|—/u:/ (see Figure 159) again manifests the high preponderance of the short member.

Positional Distribution

The Vowel /u:/

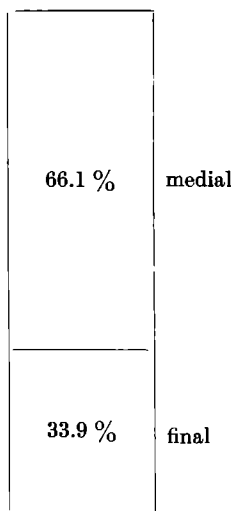


Figure 158

Vowel Phonemes

Short versus Long

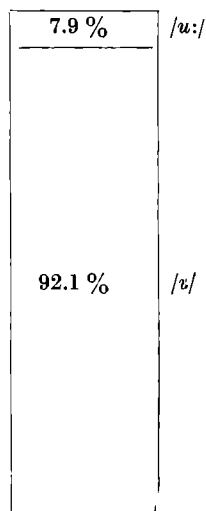


Figure 159

Summary

To summarize the findings on vowels as they were realized in the vocabulary of the first five hundred words, these conclusions may be drawn;

All Czech vowels, short and long, which build up the vocalic system in Standard Czech, appear in the child's idiolect. The phonetic realization of each of the vocalic phonemes has been firmly established as concerns all distinctive and redundant

features. In other words, all vowels are neutral, based on oppositions of front *versus* back, high *versus* mid and low *versus* mid tongue position. As for the redundant feature of rounding, it is correctly attributed to the back vowels only. In contrast-distinction to both previous stages, none of the additional non-distinctive variations of vocalic phonemes appear in this developmental stage. Furthermore, the quantitative opposition of short and long appears in the vowels in this period. As concerns the quality, the long high vowels /i/, /u/ are higher than the corresponding short vowels and so are, to a somewhat lesser degree, the long mid vowels /e/, /o/, as compared to their short counterparts. On the other hand, the long central vowel /a:/ is slightly lower than /a/. The average length of the long vowels is about twice as long as the length of the corresponding short vowels. Under emphasis, however, the vowels still tend to be longer than identical vowels in expressively neutral utterances. Since such lengthening is positionally predictable (it occurs in the final position in most cases) and affects both short and long vowels, it does not disturb the quantitative phonemic opposition. Nor is this opposition disturbed by the opposite process, i.e. the occasional shortening of the high long vowels /i/ and /u/.

Vowel Phonemes
Tongue Position

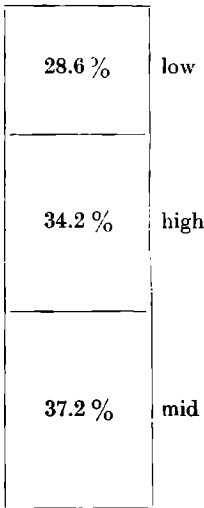


Figure 160

Vowel Phonemes
Points of Articulation

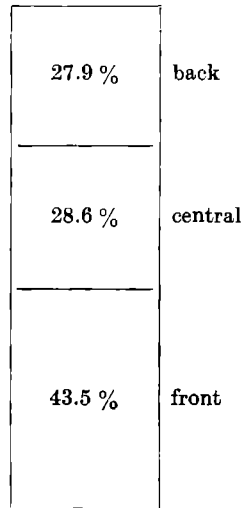


Figure 161

Vowel Phonemes
Short *versus* Long

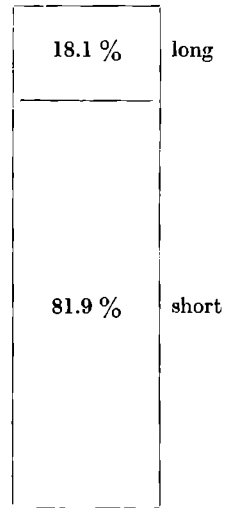


Figure 162

In terms of phonemics, each of the vowels has the status of an independent phoneme, with one restriction; the long [o:] has only the allophonic status, due to the fact that loan-words (where its phonemic status would be undoubted) are more or less exceptional in the child's vocabulary.

Figures 160, 161 and 162 show the vocalic phonemes in the light of their distinctive features. As the numbers indicate, the high, mid and low vowels are evenly balanced in distribution. The front vowels, however, predominate, compared to back and central, accounting for a most 50% of the total of occurrences. By far the greatest

Vowel Phoneme Frequencies

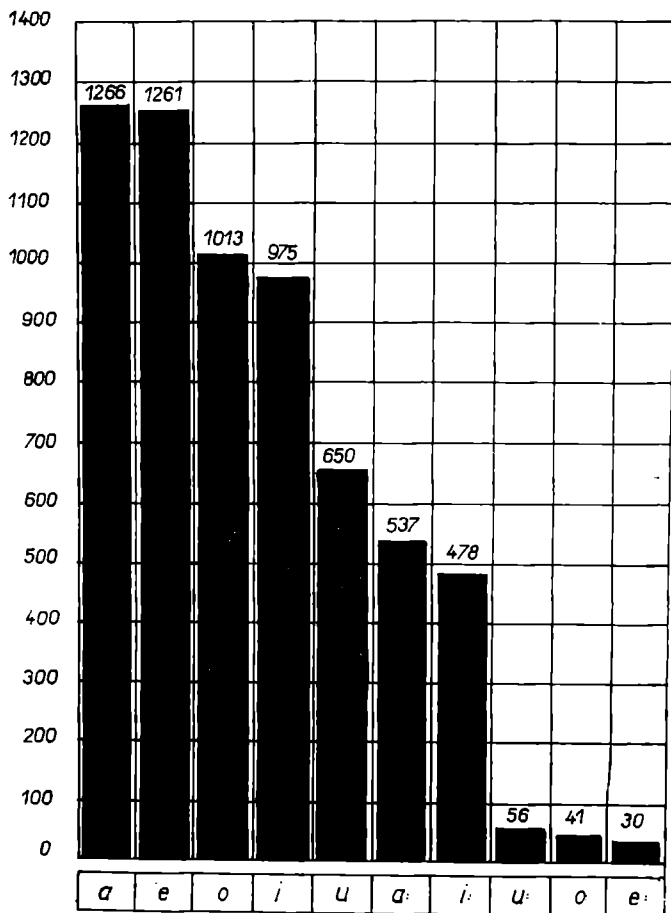


Figure 163

difference, nevertheless, is shown in the quantitative opposition where the short vowels amount to 81.9%.

As for the frequency counts of separate vocalic phonemes, they are arranged in the following order:

the phoneme /a/ remains the most widely distributed vocalic phoneme in all three developmental stages, regardless of the fact that the long *a:* is charted separately in the last stage.—The phoneme /e/ comes second in the frequency scale, occupying this place instead of the phoneme /i/. There follows /o/, thus shifting /u/ to the fifth, i.e. the last place as far as the short vowel phonemes are concerned. The sixth, seventh and eighth places are occupied by the phonemes /a:/, /i:/, /u:/, arranged in the given order of frequency. [o:] comes ninth and /e:/ tenth. Compared to the frequency countings reported by Mazlová and Kučera for Standard Czech, our findings closely correlate.

Figure 163 shows all vocalic phonemes found in the data in order of frequency of occurrence. Their proportions are given in Figure 164.

Figure 165 shows the proportions of the initial, medial and final position of vowels. As in both previous stages, so too in this third one the vowels are most frequently distributed in the medial position. The comparison of the findings in the three stages indicates the gradual increase of medial occurrences, cf. 54.0%—62.6%—71.3%.

The figures with regard to the final position, on the other hand, are decreasing, cf. 41.6%—31.7%—25.3%. The realization of the proper final consonants, causing the shift of the former final vowels into their medial positions in the course of speech development, has been mentioned in other place. Here we shall draw attention to the ratio of open and closed syllables, which also exerts its influence on the statistics characterizing the final position of vowels. While in the first developmental stage the open syllables accounted for 92.8% of the total of syllable occurrences, in the second stage the ratio between the open and closed syllables is expressed in the following figures: 80.6 : 19.4—illustrating the increase of the closed syllables. The same prog-

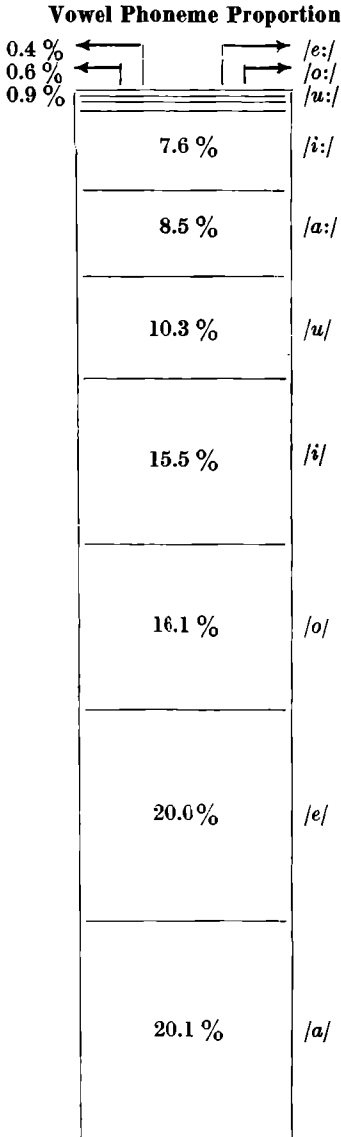


Figure 164

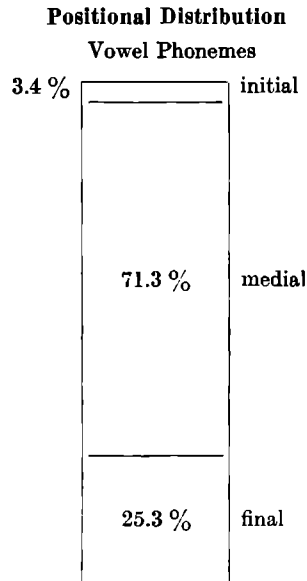


Figure 165

ress continues in the third developmental stage where the closed syllables amount to 30.5% of the total of syllable occurrences.

The smallest figure shown in the initial position in the third developmental stage is easily explicable on the ground of the general dislike of Czech for employing the vocalic phonemes in the onset. It is natural that this phenomenon must influence the statistics at that stage of speech development where the vocabulary of the child approximates to that common in Czech both in selection of the words and in realization of the consonants and vowels in their correct place.

In distinction to vocalic phonemes, the learning process has not been accomplished as far as the vocalic chains are concerned.

As for the diphthongs, two occurred in the realization of the first five hundred words, viz. [ou] and [au]. Of these two, the latter is more stable in the child, and was neither replaced nor monophthongized. The question might arise of why the diphthong [au], though alien to the indigenous phonemic system, shows greater stability than the sole Czech diphthong [ou]. In our opinion, several factors played their role in the earlier stabilizing of [au]. First, though alien as a diphthong, it consists of the vowels *a* + *u*, i.e. two of the three components of the fundamental vocalic triangle. Both these components were established in the earliest developmental stage. Secondly, the diphthong [au] occurs in the interjectional forms *au*, *auvej* and was used by the child to express any kind of pain. One important phenomenon mentioned in another place must be recalled here; the child knows how to pronounce even difficult phonemes or their sequences in interjections, while in other word categories he replaces them by various substitutes. Thirdly, the diphthong [au] appears in the item *auto*. Though a loan-word, it is—as the boy's favourite object—used with high frequency, thus enabling a lot of practice.

The diphthongal realization of the vowel chain [ou], on the other hand, is exceptional even in this period. Compared to [au], [ou], being replaced by the long [o:], represents the less mature developmental stage. The question arises of whether the child, in his earliest developmental stage, does not perceive only one of the features which compose the diphthong, namely, its length, so that in expressing this feature he simply lengthens the first of the two components while dropping the other. This suggestion might perhaps help in solving the question of why children—in simplifying the diphthongs—generally replace them by a long vowel instead of dropping one of the vowels as they do in simplifying the consonantal clusters.

As in the diphthongs, so too in the realization of the hiatus, the boy found difficulty. In most cases he avoided it by inserting the hiatic consonant [v]. As [v] appears in this function in Colloquial Czech, the child probably chose these "easier" forms for imitation. Besides this, however, he employed hiatic [v] even within the word, namely between the prefix and stem, cf. [nevuhoði.m] *nehodím*, [nevužuži.m] *nevdřím*. As such examples do not exist either in Standard or Colloquial Czech they must be considered his own formations, which helped him to avoid the uncomfortable vocalic chain. Even much later on, at the age of 8, when he actively read and wrote and had thus visual support, he still found hiatus a very difficult problem. Here are some examples of how he dealt with it in loan-words; he realized [feda:l] or [feduda:l] instead of *feudál*; or [terorije] instead of *teorie*; or [pnematika] or [pnevmatika] instead of *pneumatika*.

CONSONANTS

The analysis of the corpus of the first five hundred words reveals these consonantal phonemes and allophones in the child's consonantal system:

	Labials		Alveolars		Palatals	Velo-glottals	
	bilabials	labio-dentals	prae-alveolars	post-alveolars		velars	laryngeal
Stops	p b		t d		č ď	k [g]	
Nasals	m		n		ň	[ŋ]	
Affricates			c [č]	č			
Fricatives		f v	s z	š ž	j	x	h
Lateral			l				
Vibrant	[R]		—	—			

Figure 166

Like the table of vocalic phonemes, the table of consonant phonemes, too, indicates a steady progress in establishing the consonantal phonemes and their allophones according to their Standard Czech models.

All the non-Standard Czech variants reported in both previous stages are absent now, illustrating thus the stabilization of the correct phonetic realization and the mastering of all distinctive features in consonants.

To open the chapter on consonants a brief outline is inserted to compare those of the Standard Czech consonantal phonemes which appear in the child with those which are still missing;

Stops

As the Fig. 166 indicates, there exist voiceless and voiced phonemes at the bilabial, alveolar, palatal and velar points of articulation, viz. /p/—/b/, /t/—/d/, /t/—/ď/, /k/—/g/, in the child's consonantal system. Compared to Standard Czech, the two systems are identical.

Nasals

The nasals appear at the bilabial, alveolar, palatal and velar points of articulation, viz. /m/, /n/ and /ň/. Of them, the phoneme /n/ has two allophones, alveolar [n] and velar [ŋ]. As with the stop phonemes, so too with nasals the two systems are identical.

Affricates

Two phonemes represent this group in the child's consonantal system, viz. the praealveolar /c/ and postalveolar /č/. While the phoneme /c/ has a voiced allophone,

/č/ has not, contrary to the Standard Czech system where both affricates appear in voiceless and voiced allophones.

Fricatives

The fricatives appear at these points of articulation; labiodental (/f/—/v/), alveolar (/s/—/z/, /š/—/ž/), palatal (/j/), velar (/x/) and laryngeal (/h/). As compared to Standard Czech, the two systems of fricatives are identical.

The Lateral

In accordance with Czech, the child has one lateral phoneme at the alveolar point of articulation.

Vibrants

As shown in the table, the child has only one vibrant, produced moreover at the bilabial point of articulation. Compared to the Standard system, which contains two vibrants, /r/ and /ř/, produced at the alveolar point of articulation, the instability of this type of consonant is evident.

The following is a description of the plosive consonants.

THE PLOSIVE CONSONANTS

The Plosive /p/

Phonetic Realization

The voiceless bilabial stop phoneme /p/ has a stable phonetic realization and corresponds to the identical phoneme in Standard Czech in all distinctive features.

Distribution

The phoneme /p/ comes third in the frequency order of consonants. Its 552 occurrences in the realizations of the first five hundred words constitute 11.9% of the stop phonemes, 6.7% of the consonantal phonemes and 3.8% of all phonemes counted. The high frequency of /p/ in the child's speech does not correspond to its comparatively low frequency in the common Czech word-stock (cf. the tenth and the ninth place in the frequency orders reported by Mazlová and Kučera). The widespread distribution of the phoneme /p/ in the nursery words has been illustrated and explained in the first-fifty-word period. A comparison of the third place in the frequency scale of consonants in the first-five-hundred-word period with the fourth place in the first-one-hundred-word period and the first place in the first-fifty-word period indicates that /p/ remains a widely distributed phoneme in the child's speech even when the vocabulary no longer consists of nursery forms or interjections and when /p/ appears only in its proper place of occurrence, cf. [pa:pa] *pápá*, [hapa:] *hapá*, [houpi] *houpy*, [papučka] *papučka*, [plavat] *plavat*, [psa:t] *psát* [upečeme] *upečeme*, [pla:ce] *práce*. In other words, the fact that the phoneme /p/ has lost its function as a substitute for other consonantal phonemes, mostly /b/ and /f/, does not affect the frequency count. As an example of exceptional usage of /p/ the instance [papesní:ček] *kapesníček* is the only one noticed in the realization of the first five hundred words. Distant sound assimilation accounts for the change *k* > *p*.

Positional Distribution

The Plosive /p/

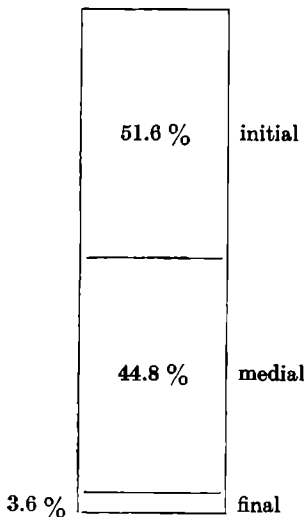


Figure 167

The phoneme /p/ is not limited as far as the place of occurrence is concerned and appears word-initially, word-medially and word-finally, in the said order of frequency. Being a paired voiceless consonantal phoneme, however, it is used in complementary distribution with /b/ and its occurrence is thus restricted to the voiceless consonantal environment. It can, however, combine with those phonemes which, though voiced, are not opposed to any other phoneme solely by this feature, i.e. the sonants /l/, /m/, /n/, /ŋ/, /j/ and /r/. No restriction concerns the vocalic environment and /p/ freely combines with all vowels.

Figure 167 shows the proportion of the initial, medial and final /p/ in the realization of the first five hundred words.

The Plosive /b/

Phonetic Realization

Like voiceless /p/, its voiced counterpart /b/ also has a stable phonetic realization and corresponds to the identical phoneme in Standard Czech in all distinctive features.

Distribution

The phoneme /b/ comes eight in the frequency scale of consonants. Its 428 occurrences in the realizations of the first five hundred words constitute 9.2% of the stop phonemes, 5.2% of the consonantal phonemes and 2.9% of all phonemes counted. While in the second developmental stage the number of occurrences of this voiced bilabial phoneme was higher as compared with the first, it is considerably lower now (cf. the fifth, third and eighth place in the frequency orders of consonantal phonemes in the three stages). As an explanation for its increasing frequency in the second stage we offered the stabilization of the feature of voice. In the same place we have mentioned that the phoneme /b/ is most widely distributed in interjections as *búbú, bububu, bébé, baf, bum, bác, bumbác* and in the nursery words *bába, bak, bakaný, bebé, bebičko, hambatý, bumbat, bacat*, while its functional load in the common Czech word-stock is comparatively low (cf. its 14th and 15th place in the frequency scale of Mazlová and Kučera). This fact helps in explaining the decrease of /b/ in the third developmental stage where the words of common vocabulary come to prevail over the interjections and nursery forms.

Most of the occurrences of /b/ are correct; [boji:] *bolí*, [bolelo] *bolelo*, [blejle] *brýle*, [bla:to] *bláto*, [bubi:nek] *bubínek*, [hlobeček] *hrobeček*, [oba:tit] *obrátit*, [zuba:nek] *zoubek*. Of the exceptional, let us mention at least a few instances; [babo:nek] *balonek*, [blablence] *mravenec*, [na:bobičko] *nádobíčko*, [boda] *voda*,¹⁰¹ [tabeňica] *stavebnice*.

¹⁰¹ In most of the findings on speech development, data illustrating the change *v > b* appear and are accounted for by greater stability of the stop /b/ as compared to the fricative /v/. This certainly holds good in the first developmental stage. We have, however, data where /b/ replaces /v/ at a time when both the distinctions, i.e. occlusivity and fricativity, were firmly established in the child, cf. [boja:ki] *vojáky*. The item appeared in a baby song and as the boy had never heard it

In all of these, assimilation accounts for /b/ replacing other consonantal phonemes.

As far as the place of occurrence is concerned, the phoneme /b/ is—as a paired voiced consonantal phoneme—restricted to the initial and medial position. Of these, the medial is slightly more frequent. As for the sound environment, /b/ appears in combination with voiced consonants only. No restriction, however, concerns its combination with the vocalic phonemes.

Figure 168 shows the proportion of the initial and medial /b/ in the realizations of the first five hundred words.

Before leaving the characterizing of the two bilabial stop phonemes /p/ and /b/ we shall devote attention to the question of which of the two is more frequently distributed in the three developmental stages. The comparison of the frequency counts shows a more or less balanced distribution of the pair with slight predominance of the voiceless member in the first and third stage and the opposite ratio in the second stage. The total numbers illustrate the preponderance of the voiceless /p/. Indicated in Figures 169—172 are the ratios in the first, second and third developmental stages and in the total.

Positional Distribution
The Plosive /b/

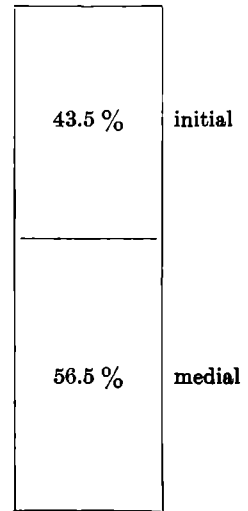


Figure 168

Consonant Phonemes
Voiceless *versus* Voiced

50 words

100 words

500 words

total numbers

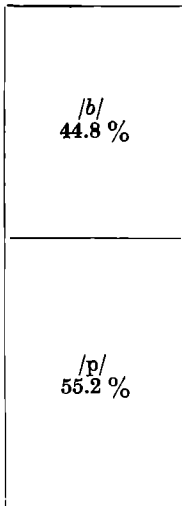


Figure 169

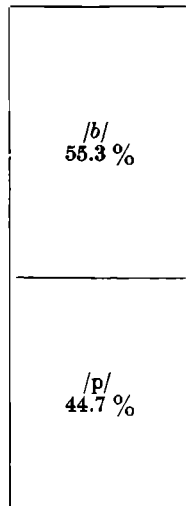


Figure 170

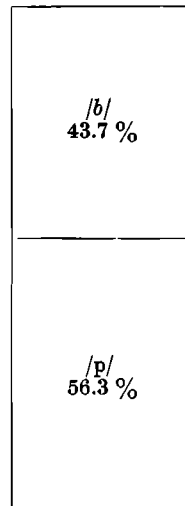


Figure 171

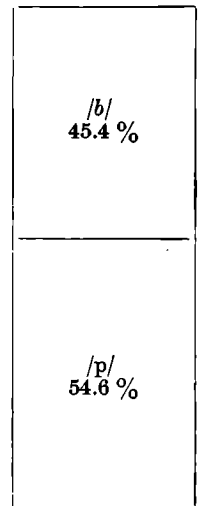


Figure 172

before, he identified and assimilated it with the verbal form [boji:], i.e. [boja:k] is the one who is afraid. The principle of perseveration made him cling to this form for a long time. Such instances, however, do not belong—in our opinion—to phonetics but to grammar, where various changes such as analogy, paronymic attraction, blending etc. play a no less important role in the language learning process.

The Plosive /t/

Phonetic Realization

The phonetic realization of the voiceless alveolar stop phoneme /t/ is well established in all distinctive features and no deviations were noticed in the child's pronunciation as compared to realization of the identical phoneme in Standard Czech.

Distribution

The phoneme /t/ comes seventh in the frequency scale of consonants. Its 457 occurrences in the realizations of the first five hundred words constitute 9.9% of the stop phonemes, 5.5% of the consonantal phonemes and 3.2% of all phonemes counted. Compared to the previous stages, the distribution of /t/ has decreased. This may surprise us when viewed from the angle that /t/ has a high functional load in the Czech word-stock (cf. its 4th and 3th place in the frequency orders of Mazlová and Kučera), but not in the child's vocabulary, where in the learning process /t/ loses its substitutive function with the refinement of the distinctive features in other consonantal phonemes. The examples which illustrate the proper distribution of /t/ follow; [ta:ta] *táta*, [ta'i:nek] *tatínek*, [uteču] *uteču*, [kalotki] *kalhotky*, [zabi:t] *zabít*, [čelt] *čert*, [čtíži] *čtyři*, [tlavička] *travička*, [tvalox] *tvaroh*. The older developmental stage is reflected in two instances, namely, [tlu] *kluk* and [tolešto] *kolečko* where /t/ is replacing the correct /k/.

As for the place of occurrence, /t/ is not limited, and occurs word-initially, word-medially and word-finally. Of the three positions, the largest figures occur for the medial where, compared to both previous stages, /t/ is distributed more frequently. This holds good for the final position as well. The initial /t/, on the other hand, has a lower frequency.¹⁰² As for the sound environment, /t/ combines freely with the voiceless consonants, with sonants and with /v/, which distributionally is not exactly a voiced counterpart of /f/. No restriction concerns its combination with vocalic phonemes, the sequence [ti] is, however, the least frequent.

Figure 173 shows the proportion of the initial, medial and final /t/ in the realizations of the first five hundred words.

The Plosive /d/

Phonetic Realization

Like the voiceless /t/, its voiced counterpart /d/ also has a stable phonetic realization and corresponds to the identical consonant in Standard Czech in its characteristics as a voiced alveolar stop phoneme.

Distribution

The phoneme /d/ comes thirteenth in the frequency scale of consonants. Its 258 occurrences in the realizations of the first five hundred words constitute 5.6% of the stop phonemes, 3.1% of the consonantal phonemes and 1.8% of all phonemes counted. The low frequency of this phoneme, reported also in the two previous stages, is not surprising in view of the fact that its occurrence in nursery words and interjections is very rare and that neither in Czech does it belong to those phonemes which

¹⁰² On the question of initial position of consonants cf. J. Vachek, *Fonologie lexika*, p. 395 ff.

Positional Distribution

The Plosive /t/

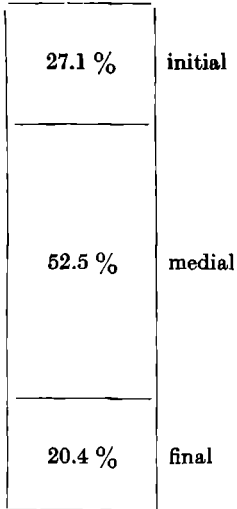


Figure 173

Positional Distribution

The Plosive /d/

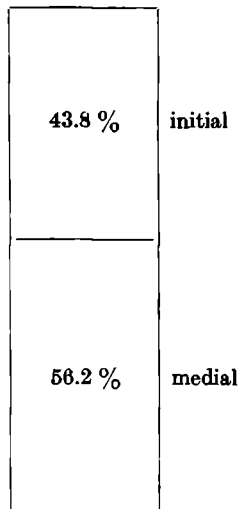


Figure 174

Consonant Phonemes

Voiceless *versus* Voiced

50 words

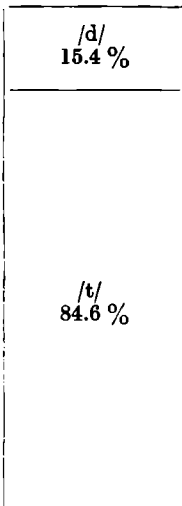


Figure 175

100 words

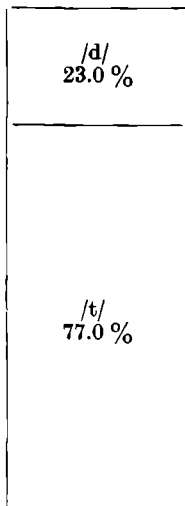


Figure 176

500 words

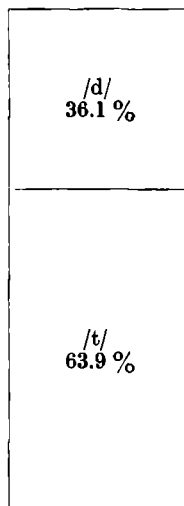


Figure 177

total numbers

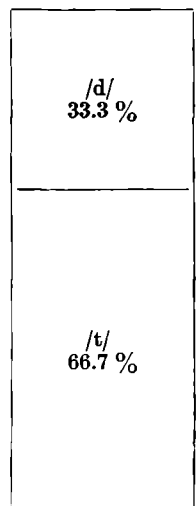


Figure 178

have a high functional load. As concerns the distribution of /d/ in the child's vocabulary, most of the occurrences are correct, cf. [duc] *duc*, [daleko] *daleko*, [dudli:k] *dudlík*, [hudli] *hudry*, [gdo] *kdo*, [stejda] *strejda*, [blinda:k] *bryndák*, [sunda:me] *sun-dáme* etc. Of the two exceptional instances cf. [deda:m] *nedám* and [duju, dukuju, de-kuju] *děkuji*, the former is due to sound assimilation, the latter to the depalatalization of the proper [ď].

As a voiced paired consonantal phoneme, /d/ is restricted in the place of occurrence and occurs only in the medial and initial position, in this order of frequency. In combination, no restriction applies to its combining with vocalic phonemes. In consonants, only the neighbourhood of the voiced phonemes is admissible.

Figure 174 shows the proportion of the initial and medial /d/ in the realizations of the first five hundred words.

Like the pair /p/—/b/, the pair /t/—/d/ will be dealt with in regard to their frequency in the three developmental stages and in total numbers. Unlike the bilabial pair, the alveolar is not balanced and the high preponderance of the voiceless member is evident in all the Figures 175—178.

The Plosive /t̚/

Phonetic Realization

With the refinement of the correct degree of palatalization, the phoneme /t̚/ became firmly established in all distinctive features; in its characteristics—a voiceless palatal stop phoneme—it fully corresponds to the identical phoneme in Standard Czech pronunciation.

Distribution

The phoneme /t̚/ comes fifteenth in the frequency scale of consonants. Its 194 occurrences in the realizations of the first five hundred words constitute 4.2% of the stop phonemes, 2.4% of the consonantal phonemes and 1.3% of all phonemes counted. Compared to both previous stages, the distribution of /t̚/ is decreasing, cf. its fourth, fifth and fifteenth place in the frequency orders of the first, second and third stage respectively. In view of what has been said on the frequent occurrence of /t̚/ in the function of a substitutive sound in the first-fifty- and first-one-hundred-word period, decreasing figures were expected with the stabilization of the consonantal phonemes which were replaced before, all the more so that in the common word-stock of Czech /t̚/ is poorly distributed with the exception of onomatopoeia.¹⁰³

As the child at this stage of speech development has mastered the majority of consonants, the distribution of /t̚/ relates to its proper place, cf. [tali:nek] *tatínek*, [nexti:ček] *nehtiček*, [losvi:tít] *rozsvítit*, [gate] *gatě*. The older, incorrect pronunciation is, nevertheless, preserved in one of the realizations of the interjection *bác*, cf. [ba:t̚] [ba:s], [ba:c]. Under emphasis, the fluctuation between /t̚/ and /t̚/ was observed, cf. [pofo:kał] *pofoukat*.

As for the place of occurrence, /t̚/ is not limited and was recorded word-initially, word-medially and word-finally. Of the three positions, the medial is the most frequent, the initial follows and then the final. In combination, /t̚/ appears in a voice-

¹⁰³ Cf. its 18th and 19th place in the frequency orders of Mazlová and Kučera. As for the onomatopoeic words, cf. J. Vachek's observations: /t̚/ has the second highest frequency in the onset of onomatopoeia.

less environment or in the neighbourhood of the voiced-unpaired consonants. With regard to vocalic phonemes, /t/ may combine with all of them, the combinations with the front vowels being, however, far more frequent.¹⁰⁴

Figure 179 shows the proportion of the initial, medial and final /t/ in the realizations of the first five hundred words.

Positional Distribution
The Plosive /t/

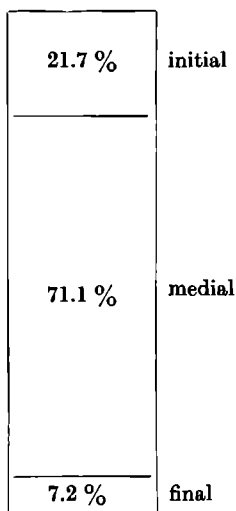


Figure 179

Positional Distribution
The Plosive /d̃/

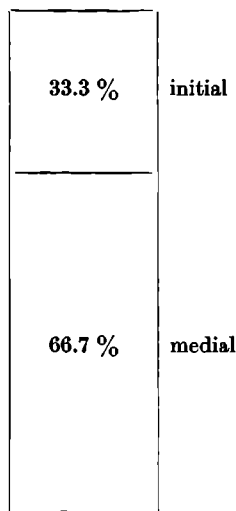


Figure 180

The Plosive /d̃/

Phonetic Realization

Like the voiceless /t/, its voiced counterpart /d̃/ became firmly established with the perfect mastering of the correct degree of palatalization. No further deviations were noticed and the characteristics—a voiced palatal stop phoneme—is identical in the child's and in Standard Czech pronunciation.

Distribution

The phoneme /d̃/ comes twenty-first in the frequency scale of consonants. Its 84 occurrences in the realizations of the first five hundred words constitute 1.8% of the stop phonemes, 1.0% of the consonantal phonemes and 0.6% of all phonemes counted. A low occurrence of /d̃/, observed also in the two previous stages, is in accordance with the slight functional burdening of this phoneme both in the child's speech and in the word-stock of Czech. Most of its occurrences are correct and the

¹⁰⁴ Cf. V. Mathesius, *Zum Problem der Belastung*, p. 151, where the author argues that the combination of the palatal stops with the velar vowels encompasses a strong expressive element, which is absent in their combination with the front vowels.

Consonant Phonemes

Voiceless *versus* Voiced

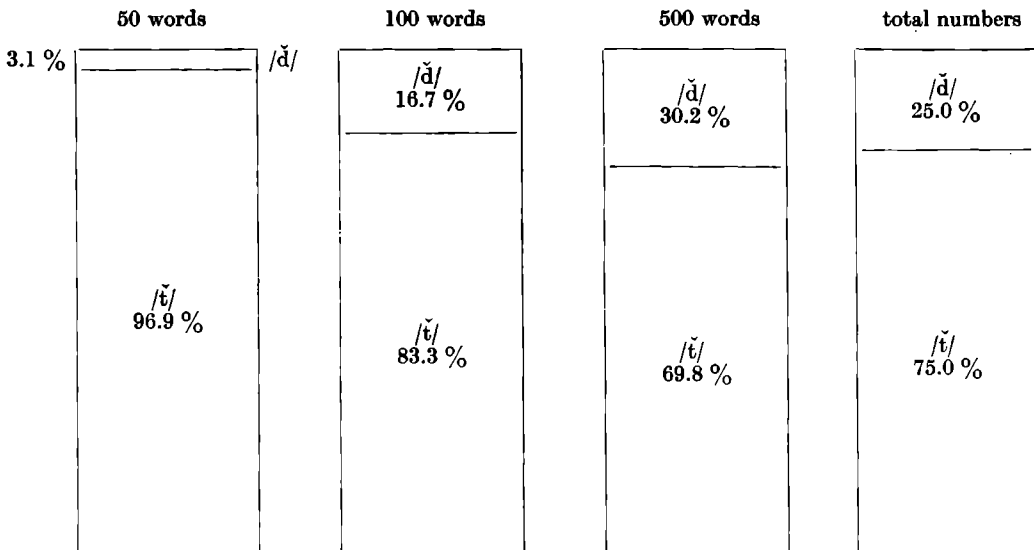


Figure 181

Figure 182

Figure 183

Figure 184

instances containing /ǎ/ have their correlates in Standard pronunciation, cf. [díte] *dítě*, [ǎeti] *děti*, [ǎeta:tko] *děťátko*, [zahoǎit] *zahodit*, [voǎička] *vodička*, [uǎela:me] *uděláme*. Assimilation of place accounts for two of the exceptional occurrences, cf. [sedňi] *sedni* and [suňǎňi] *sundej*. Its incorrect occurrence in the proper name *Jiři*, cf. [jiři:ček] represents the older developmental stage where /ǎ/ replaced the apical trill /ř/ before the fricative articulation was mastered.

As far as the place of occurrence is concerned, /ǎ/ occurs word-initially and word-medially. Due to the neutralization of the feature of voice word-finally, it does not appear in the final position. Contrary to the previous stage, where the initial /ǎ/ was more frequent, it is now the medial position in which the phoneme /ǎ/ is most frequently distributed. As regards the sound-environment, the following distributional restrictions are evident; being a voiced paired consonantal phoneme, the occurrence of /ǎ/ is possible only in a voiced milieu. As regards its combinations with vowels, front vowels are preferred, as the above mentioned examples illustrate. One instance which contradicts this preference is due to haplology, cf. [uǎa:lo] instead of the correct [uǎelalo]¹⁰⁵.

Figure 180 shows the proportion of the initial and medial /ǎ/ in the realizations of the first five hundred words.

A comparison of the frequencies of the voiced /ǎ/ with the voiceless /t/ reveals a similar picture to that of the alveolar pair. The voiceless palatal stop phoneme is

¹⁰⁵ On the question regarding the combination of the phoneme /ǎ/ with the velar vowels in Czech cf. footnote 104.

distributed with much higher frequency in the first, second and third developmental stage. Its preponderance over the voiced counterpart is shown in the total numbers as well. Figures 181—184 indicate the ratios.

The Plosive /k/

Phonetic Realization

After a more complicated learning process as regards the velar point of articulation, the phonetic realization of /k/ was firmly established at this stage of speech development. In its characteristics—a voiceless velar stop phoneme—/k/ fully corresponds to the identical phoneme in Standard Czech pronunciation.

Distribution

The phoneme /k/ comes first in the frequency scale of consonants. Its 1555 occurrences in the realizations of the first five hundred words constitute 33.6% of the stop phonemes, 18.9% of the consonantal phonemes and 19.7% of all phonemes counted. Compared to previous stages, the steady growth of the occurrences of /k/ is shown both in the figures of percentages (cf. 15.2%—20.3%—33.6%) and in the change in the frequency scale (cf. its third, first and first place in the three developmental stages). To explain the high frequency of this phoneme, three main factors are to be taken into consideration:

1. its leading position in interjections,
2. its existence in the diminutive suffix *-ček, -čka, -čko*,
3. its high functional load in the common Czech word-stock.

The former two factors further account for the fact that /k/ is more widely distributed in the child's speech as compared to the speech of adults (cf. the place of /k/ as first in our data with the sixth place in the statistics reported by Mazlová and Kučera).

The examples of the occurrences of /k/ in its proper place follow; [*kikiliki*:] *kykyryký*, [*kokokoda:k*] *kokokodák*, [*kva:kva*:] *kvá kvá*, [*kafi:ško*] *kafičko*, [*kvi:tečko*] *kvi-tečko*, [*lohli:k*] *rohllk*, [*nakapa:me*] *nakapeme*, [*skopičini*] *skopičiny*. Many other exceptional occurrences, the following are of interest: [*kukiňka*] *kuchyňka*, [*kuška*] *tužka*, [*kapičkiki*] *kapičky*, [*kapka:tko*] *kapátko*. Assimilation accompanied by the child's attempt to show that he has mastered the realization of the velar stop /k/ is perhaps the most plausible explanation.¹⁰⁶ Furthermore, the change *tl > kl*, frequent in Colloquial Czech and in dialects, appears in the child in one instance, viz. [*kluče*] *tluče*¹⁰⁷.

Positional Distribution

The Plosive /k/

19.8 %	initial
57.2 %	medial
23.0 %	final

Figure 185

¹⁰⁶ Cf. a similar example in Nadoleczny: "duten Ta Herr Dotta — Guken Gag Herr Goka". For particulars, see Ohnesorg, *Ze srovnávací fonetiky*, p. 97.

¹⁰⁷ Many other examples appear, however, later on, cf. [*pikli:ček*] *pytlíček*, [*kleskat*] *tleskat*, [*klači*:] *tláčt*.—This phenomenon is not typical of Czech only, cf. the identical change in vulgar Latin *vellum > veculum*.

As for the place of occurrence, the phoneme /k/ is not limited, and occurs in the word-initial, word-medial and word-final position. Of the three, the medial accounts for more than half of the total occurrences while the initial and the final are almost balanced. As far as the sound environment is concerned, /k/ is found in combination with all vocalic phonemes. With consonants, it is restricted to the voiceless environment. Its neighbourhood to the sonants and to /v/ is, however, admissible.

Figure 185 shows the proportion of the initial, medial and final /k/ in the realizations of the first five hundred words.

The Plosive /g/

Phonetic Realization

Though the boy had very few models for imitation as far as this voiced velar consonant is concerned, he mastered well its phonetic realization and, compared to Standard Czech pronunciation, no deviations were noticed either in production or in auditory impression.

Distribution

The phoneme /g/ comes twenty-fourth in the frequency scale of consonants. Its 30 occurrences in the realizations of the first five hundred words constitute 0.6% of the stop phonemes, 0.4% of the consonantal phonemes and 0.2% of all phonemes counted. The low frequency of /g/ was expected in view of the fact that it does not appear either in the nursery words or in interjections and its functional load in the common Czech word-stock is the lowest of all consonantal phonemes. Furthermore, the special status of /g/ should be mentioned here; in the loan-words, /g/ has a phonemic status and combines freely with all vocalic phonemes. In consonantal environment the velar stops /k/ and /g/ occur in the same distributional relationship as other voiceless and voiced consonants, i.e. in complementary distribution in the positions where the voiced *versus* voiceless feature is predictable. In non-loans, on the other hand, /g/ occurs only as a voiced allophone of the phoneme /k/, due to the operation of the voice assimilation, cf. [gdo] *kdo*, [ŋegde] *někde*, [gdepak] *kdepak*. Regardless of the low figures which characterize this voiced velar stop in the realizations of the first five hundred words, it is evident that the two functions of this consonant, namely the function of an autonomous phoneme and the function of a positional variant exist in the child as well. The following are examples containing the phoneme /g/; [gafovat, glafovát, glafova:m, fotoglafovát] *fotografovat*; [do gala:že, v gala:ži, gala:š, gala:ška] *garáž*; [gajeti, galeti, sigaleti, cigaletki, cigaleti] *cigarety*; [tigl, tigži:k, tigži:ček] *tygr*; [gate, gatečki, na gate, gati] *gatě*; [gamafo:n] [gagafo:n], [glamofo:n] *gramofon*. The derived forms show that the boy treated the loan-words in the same way as the home-words as far as the suffixes are concerned. In the vocalic environment, the fluctuation *g/k* appeared and the two forms existed parallel to each other, cf. [kafovát]—[gafovat] *fotografovat*, [kala:že]—[gala:že] *garáže*, [kate]—[gate] *gatě*. Of them, only the last doublet might be ascribed to imitation of the Colloquial Czech pronunciation.¹⁰⁸

¹⁰⁸ Data illustrating free fluctuation of *g/k* are not exceptional in vulgar or colloquial pronunciation, cf. [cika:n — ciga:n] [*kauč* — *gauč*], [dekret — degret], [demokracije — demogracije]. For a detailed description of this phenomenon, see H. Kučera, *Phonology*, p. 37.

As an allophone of the phoneme /k/, [g] appeared in the following non-loans; [gdo] *kdo*, [gdopak] *kdopak*, [gde] *kde*, [gdepak] *kdepak*.

As regards the place of occurrence, the velar stop /g/ both in the function of an autonomous phoneme and in the function of an allophone is restricted to the two positions, viz. initial and medial. The former of the two is more often found. As regards the sound environment, /g/ combines freely with the vowels; with consonants, however, its occurrence is possible only in the voiced sequences.

Figure 186 gives the proportion of /g/ in the initial and medial positions.

In spite of the special status of /g/, a comparison of its number of occurrences with that of /k/ was made, and the ratios are indicated in Figures 187—190. After what has been said about /g/, the striking preponderance of /k/ needs no further comment.

Positional Distribution

The Plosive /g/

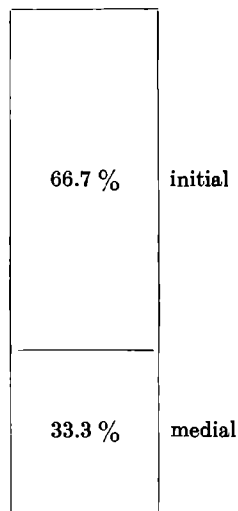


Figure 186

Consonant Phonemes

Voiceless *versus* Voiced

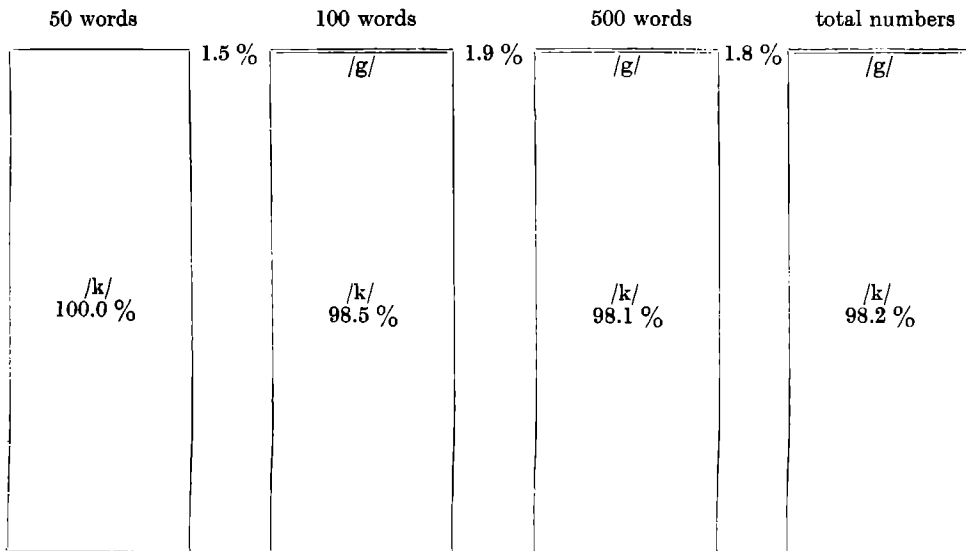


Figure 187

Figure 188

Figure 189

Figure 190

The Nasal /m/

Phonetic Realization

The nasal bilabial phoneme /m/ has a stable phonetic realization in all distinctive features with no deviations from the identical phoneme in Standard Czech pronunciation.

Distribution

The phoneme /m/ comes fifth in the frequency scale of consonants. Its 493 occurrences in the realizations of the first five hundred words constitute 10.6% of the stop phonemes, 6.0% of the consonantal phonemes and 4.3% of all phonemes counted. The comparatively high frequency of this bilabial nasal phoneme was reported in both previous stages. Compared to them, the figures characterizing its occurrence has increased, as the change in the frequency order also illustrates (cf. the sixth place in the first and second developmental stage with the fifth in the present stage). Besides its frequent occurrence in nursery words and interjections, the phoneme /m/ appears with high frequency in the words which enter newly into the child's vocabulary, supporting thus the findings of V. Mazlová and H. Kučera, who correspondingly attributed to /m/ the seventh highest place in the frequency scale of consonants.

Positional Distribution

The Nasal /m/

27.8 %	initial
49.1 %	medial
23.1 %	final

Figure 191

The phoneme /m/ appears mostly in its proper occurrences, as the following examples illustrate; [me:mé] *mémé*, [ma:ma] *máma*, [muk] *muk*, [mala:] *malá*, [sama] *sama*, [muzomu:lka] *muchomůrka*, [placujeme] *pracujeme*, [bum] *bum*, [ham] *ham*, [hača:m] *hačám*. Various phonetic changes, such as sound assimilation, assimilation of place, dissimilation, metathesis and the rise of svarabhakti consonants account for the few incorrect occurrences of this bilabial nasal phoneme, cf. [momonos] *dobrou noc*, [hamba] *hanba*, [sedmeme] *sedneme*, [žambant] *bažant*. In characterizing the vocalic phoneme /a:/, we have mentioned the child's predilection for the ending [-a:m], which by analogy to the productive verbs of the type "děláť" he used in the majority of verbs, cf. [pada:m] *padám*, [nedela:m] *neděám*, [počka:m] *počkám*—[pi:sa:m] *píši*, [pizova:m] *vpichujuji*, [paka:m] *pláči*.

As far as the place of occurrence is concerned, the phoneme /m/ is not limited and occurs word-initially, word-medially and word-finally. Of the three positions the highest figures appear for the medial which accounts for almost a half of the total occurrences. The initial and final positions are more or less balanced, as Figure 191 illustrates. The frequent distribution of /m/ in the final position was reported in both previous stages and is typical even in this third. When comparing other consonantal phonemes in this position we get the following order of frequency; /m/ 23.1%—/k/ 23.0%—/t/ 20.4%—/j/ 19.5%. Of the remainder of the consonantal phonemes only /f/

has a fair distribution, i.e. 13.1%, while the occurrences of the others are extremely low. No distributional restriction affects /m/ as regards the sound environment. Being a voiced sonant, it freely combines with all vowels and all consonants, voiced and voiceless, as will be shown in the chapter on Consonantal Clusters.

The Nasal /n/

Phonetic Realization

As with the phonetic realization of the alveolar oral stop phonemes, too the phonetic realization of this alveolar nasal stop phoneme is well established in this developmental stage and no deviations as regards its distinctive features were recorded in the child as compared to Standard pronunciation.

Distribution

The phoneme /n/ comes sixth in the frequency scale of consonants. Its 492 occurrences in the realizations of the first five hundred words constitute 10.6% of the stop phonemes, 6.0% of the consonantal phonemes and 3.4% of all phonemes counted. Compared to the previous stage, the phoneme /n/ shows a steady progress in being distributed in the child's idiolect (cf. its 11th place in the frequency scale of consonants in the first-one-hundred-word period with its 6th place in the first-five-hundred-word period). The high functional load of /n/ in Czech and the gradual enriching of the child's vocabulary by new expressions belonging to the common Czech word-stock is the plausible explanation for the increase in the numerical data.

Most of the occurrences of the phoneme /n/ are proper. A few examples follow for illustration; [*naspeme*] *nasy-peme*, [*nočni:ček*] *nočníček*, [*hodnej*] *hodný*, [*spadne*] *spadne*, [*velíkana:nskej*] *velikánský*, [*konvička*] *konvička*, [*bažant*] *bažant*, [*blinda:k*] *bryndák*. On the ground of analogy we account for its occurrence in expressing the verbal aspect in the forms such as [*vikoupnu*] *vykoupám*, [*da:vnu*] *dám*, [*zapi:šnu*] *zapiši*, [*zva:žnu*] *zvážím*.

As for the place of occurrence, the phoneme /n/ is not limited and occurs in the initial, medial and final positions. Of these the medial is by far the most frequent and the final by far the least frequent. Indicated in Figure 192 are the proportions of the three occurrences. As with the bilabial /m/, so too the alveolar nasal /n/ is not restricted in relation to sound sequences. Being a sonant, its combination is possible with all vowels and all consonants regardless of the feature of voice.

We have mentioned in characterizing the phoneme /n/ in the first-one-hundred-word period that simultaneously with the stabilization of the velar stop phonemes /k/ and /g/, the velar allophone of /n/ enters the consonantal repertory. While the vocabulary of one hundred words contained very few consonantal clusters, so too the occurrence of [ʒ] was exceptional. In the vocabulary of five hundred words, on

Positional Distribution

The Nasal /n/

26.0 %	initial
66.3 %	medial
7.7 %	final

Figure 192

the other hand, the child realizes most of the clusters and concomitantly, the velar allophone of /n/ appears with considerable frequency. Its has 94 occurrences in our data. Of these, 81 were observed in the two-member consonantal cluster word-medially, 3 in the three-member consonantal cluster word-medially and 8 in the two-member consonantal cluster word-finally.

The Plosive /ň/

Phonetic Realization

Like the oral palatal phoneme /tʃ/, the nasal palatal phoneme /ň/ became firmly established with the refinement of the proper degree of palatalization. No deviations compared to phonetic realization of the identical phoneme in Standard Czech were noticed in the child's pronunciation at this stage of speech development.

Distribution

The phoneme /ň/ comes twentieth in the frequency scale of consonants. Its 91 occurrences in the realizations of the first five hundred words constitute 2.0% of the stop phonemes, 1.1% of the consonantal phonemes and 0.6% of all phonemes counted. The low frequency of the phoneme /ň/ was reported in both previous stages and explained on the ground of its non-existence in the nursery forms and extremely low functional load in interjections (the sole example *mňau* was recorded). In view of the fact that /ň/ has a comparatively high distribution in Czech, as its twelfth place in the frequency order of Mazlová and Kučera indicates, increasing figures would be expected with the growth of vocabulary in the Czech-speaking child. Our numerical data, however, show the opposite process, cf. the 14th, 17th and 20th place in the first, second and third developmental stage. This fact, perhaps, requires comment. The disadvantage of most of the statistics is that they do not regard the character of the words in which the observed phoneme occurs. Such a viewpoint might explain how one and the same phoneme appears with different frequency in various materials, e.g. in child's speech and in the speech of adults. And yet, a brief look into a Czech dictionary shows that the phoneme /ň/ appears mostly in the pronouns and adverbs (cf. *nic, nikdo, někdo, něco, nějaký, několik, některý, někdy, někde, nikdy, nikudy*), in other words, in such categories which are ignored by the child as he prefers substantives and verbs, in which, on the other hand, /ň/ is distributed far less frequently, with the exception of *termina technica* (cf. *Němec, ničít, ničema, nicota, nimra, nit, nitro, niva, nížina, zbraň, dlaň, laň*) which are naturally absent from the child's vocabulary. This is perhaps one of the possible explanations for a striking discrepancy in the two frequency counts in the period where the majority of phonemes approximate to the figures which characterize their distribution in Czech.

The following are a few examples which illustrate the occurrence of /ň/ in the child's idiolect; [ňic] *nic*, [neňi] *není*, [mňau] *mňau*, [fšixňi] *všichni*, [češňe] *třešně*, [tabeňica] *stavebnice*, [ukousňi] *ukousni*, [lozepňi] *rozepni*, [sedňi] *sedni*. Assimilation of place accounts for its appearance in the instance [buňdička] cf. the standard form *bundička*. On the ground of analogy, however, we explain the appearance of /ň/ in the imperative form of verbs [splavňi] *sprav!*, [ka:kňi] *vyskoč!*

Contrary to Standard Czech, a syllabic allophone of the phoneme /ň/ appears in the child's idiolect. Though it exists in a sole example [aňi ň] it has become stabilized as a firm component of the child's phonemic inventory and was employed as one of the

means for expressing negation.¹⁰⁹ As negation is one of the elements which have a large amount of emotional connotation in the child, he is looking for new and ever more expressive means, cf. *ani ň, ani ničko, ani krok, ani malininečko, ani kapinku, ani kapinečko*. We shall deal in detail with this phenomenon in the chapter on Survey of the Speech Development in the Child.

As far as the place of occurrence is concerned, the phoneme /ň/ is not limited, though the distribution in the initial, medial and final positions varies considerably. While the medial position occupies 85.7% of the total occurrences of /ň/, the initial is represented by a sole occurrence. In sound environment, /ň/ is not restricted and combines freely with all vocalic phonemes (its combination with the front vowels being, however, more frequent). Like the other nasal phonemes, /ň/ combines with all consonants regardless of the feature of voice.

Figure 193 shows the proportion of the three positions of /ň/ in the realizations of the first five hundred words.

Summary

As in both previous stages, so too in this third one, after characterizing each of the stop phonemes, oral and nasal, the summary follows;

In accordance with Standard Czech, there are four pairs of oral stop phonemes, /p/—|b|, |t|—|d|, |tʃ|—|dʃ|, |k|—|g|, and three nasal phonemes /m|, |n|, |ň| in the child's consonantal system. All of them exhibit phonological characteristics identical with those of Standard Czech. In contradistinction to the first-one-hundred-word period, the voiced velar stop /g| became phonologized due to the existence of loan-words in the child's vocabulary. Furthermore, both the alveolar and velar allophones of the phoneme /n| have their firm place in the system of nasals.

The comparison of the functional load of the stop phonemes in the child with that of Standard Czech shows that in spite of the differing analysis and special contents of the child's vocabulary the numerical data come to exhibit a more or less close relation in most of the cases. A discrepancy is found only in the phonemes /p|, |t| and |ň|. While the bilabial phoneme /p| is used with much higher frequency by the child, the phonemes |t| and |ň| are less frequent here compared to the Czech word stock.

Coming back to articulatory features, the stop articulation has been firmly established and so has the feature of nasality. In the consonants which represent the two distinctive features, the orals are used much more frequent than are the nasal. Their proportion is given in Figure 195.

Positional Distribution
The Nasal /ň/

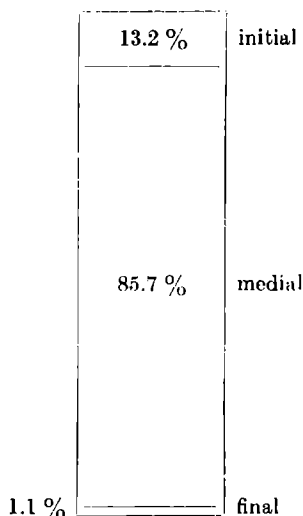


Figure 193

¹⁰⁹ Cf. the observations of V. Mathesius, who in his *Srovnávací fonologie*, op. cit. p. 51, shows that onomatopoeia and words with emotional connotation employ different sounds compared to other word categories. As an example he offers the existence of the bilabial [R] or syllabic [ʃ], otherwise unknown to Standard pronunciation.

The Plosive Consonants

	Initial		Medial		Final		Total numbers			
								stops	consonants	phonemes
<i>p</i>	285	51.6 %	247	44.8 %	20	3.6 %	552	11.9 %	6.9 %	3.8 %
<i>b</i>	186	43.5 %	242	56.5 %	—	—	428	9.2 %	5.2 %	2.9 %
<i>t</i>	124	27.1 %	240	52.5 %	93	20.4 %	457	9.9 %	5.5 %	3.2 %
<i>d</i>	113	43.8 %	145	56.2 %	—	—	258	5.6 %	3.1 %	1.8 %
<i>ʈ</i>	42	21.7 %	138	71.1 %	14	7.2 %	194	4.2 %	2.4 %	1.3 %
<i>ɖ</i>	28	33.3 %	56	66.7 %	—	—	84	1.8 %	1.0 %	0.6 %
<i>k</i>	307	19.8 %	890	57.2 %	358	23.0 %	1 555	33.6 %	18.9 %	10.7 %
<i>g</i>	20	66.7 %	10	33.3 %	—	—	30	0.6 %	0.4 %	0.2 %
<i>m</i>	137	27.8 %	242	49.1 %	114	23.1 %	493	10.6 %	6.0 %	3.4 %
<i>n</i>	128	26.0 %	326	66.3 %	38	7.7 %	492	10.6 %	6.0 %	3.4 %
<i>ŋ</i>	12	13.2 %	78	85.7 %	1	1.1 %	91	2.0 %	1.1 %	0.6 %
Total	1 382	29.8 %	2 614	56.4 %	638	13.8 %	4 634	100.0 %	56.3 %	31.8 %

Figure 194

Similarly, the feature of frontness *versus* backness is fairly stable. The preponderance of the front consonants over the back ones, reported in both previous stages, shows now only in the stop phonemes with the nasals included while the ratio between front and back oral stops is almost balanced, with slight predominance of the back ones. Figures 196 and 197 indicate the proportions of the front and back stop phonemes without and with nasals. — To carry the analysis of the features based on the

Stop Phonemes
Oral *versus* Nasal

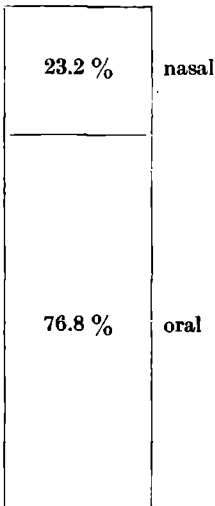


Figure 195

Stop Phonemes
Front *versus* Back

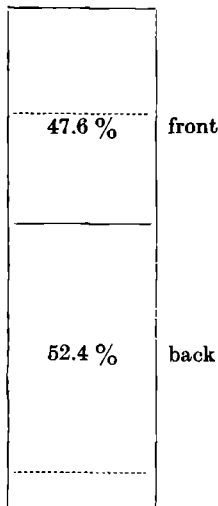


Figure 196

Stop Phonemes
(including nasals)
Front *versus* Back

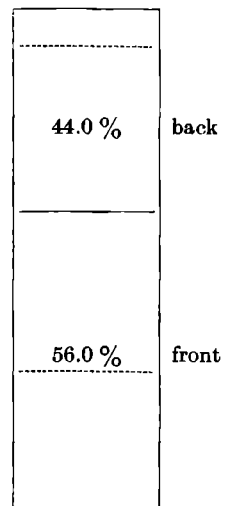


Figure 197

Stop Phonemes
Points of Articulation

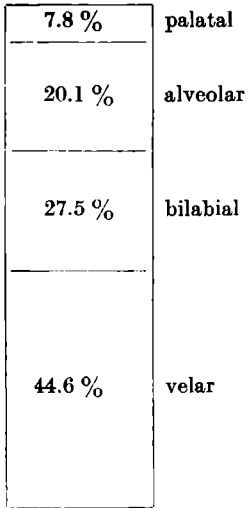


Figure 198

Stop Phonemes
(including nasals)
Points of Articulation

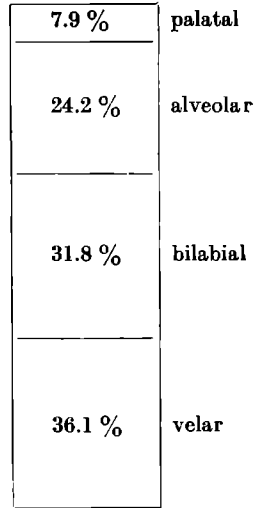


Figure 199

Stop Phonemes
Voiceless *versus* Voiced

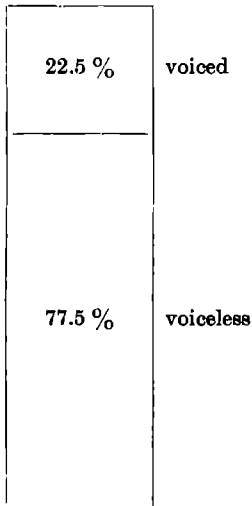


Figure 200

Stop Phonemes
(including nasals)
Voiceless *versus* Voiced

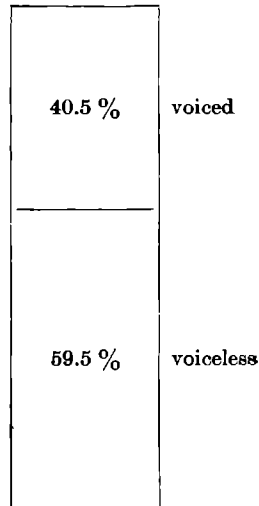


Figure 201

points of articulation further, the child has mastered well all four distinctions which are functionally relevant in Czech, viz. labiality, alveolarity, palatality and velarity. In regard to frequency of the consonants representing the said features, the stop phonemes produced in the velar area are the most frequent. The labial and alveolar follow. The palatal stops, on the other hand, are used least frequently. The same order is preserved when the nasals are added, with one difference; the proportions with nasals exhibit a more balanced picture in all points but the palatal, whose percentage remains almost identical. Figures 198 and 199 give the extent of the said proportions.

As with the other distinctions in stop phonemes, so too the feature of voicing is well established and the contrast voiceless *versus* voiced is preserved in all instances. The voiceless members, however, are still more frequent as compared to the voiced; the preponderance of the former group shows even when the voiced nasals are included in the latter one. The proportions are given in Figures 200 and 201.

All additional sound differences, reported in the earlier developmental stages, have disappeared, and no new ones appeared at this stage of speech development.

THE FRICATIVE CONSONANTS

The Fricative /f/

Phonetic Realization

With the refinement of the feature of fricativity and labio-dentality the phonetic realization of this voiceless labio-dental fricative phoneme has become well established. No deviations either in production or in auditory impression were noticed in the child's pronunciation. The bilabial allophone of /f/ which betrayed instability of the correct point of articulation in the first-one-hundred-word period does not occur in this developmental stage.

Distribution

The phoneme /f/ ranks as seventeenth in the frequency scale of consonants. Its 130 occurrences in the realizations of the first five hundred words constitute 4.5% of the fricative phonemes, 1.6% of the consonantal phonemes and 0.9% of all phonemes counted. The low figures in our frequency counts are in agreement with low distribution of /f/ in Czech, cf. the 23rd place of this phoneme in the frequency scale of consonants in Mazlová and Kučera¹¹⁰. Two factors account for more favourable ranking in our frequency scale as compared to those of Mazlová and Kučera. First, the phoneme /f/ is widely distributed in interjections, above all in those of onomatopoeic character and in the expressions derived from them, e.g. *haf*, *baf*, *bafat*, *fíki*, *ufíknout*, *fouknou* etc. Secondly, /f/ appears in the place of other consonantal phonemes. Thus, due to the analogy with the productive ending, /f/ appears in the imperative form of the majority of verbs, cf. [*plaf*] *plavej*, [*skof*] *schovej*, [*spif*] *zpívej* [*fstaf*] *vstávej*, [*fotoglaf*] *fotografuj* etc. Similarly, the analogous formation accounts for the incorrect plural and diminutives containing /f/ cf. [*pa:f*]—[*pa:fi*]—[*pa:feček*] *páv*, *pávi*, *páveček*, [*mlkef*]—[*mlkefička*] *mrkev*, *mrkvička*, [*lef*]—[*lefi*] *lev*, *lvi*.

¹¹⁰ The minimal functional load of this labio-dental fricative phoneme is due to its peripheral character as shown in the study of J. Vachek, *On Peripheral Phonemes*, p. 8; cf. also M. Romportl, *K českému souhláskovému systému*, pp. 265—277.

The operation of assimilation, either that of voice or sound distant assimilation, on the other hand, are shown in the following instances; [sfeti:lek] *světýrek*, [kfi:tečko] *květečko*, [tjalof] *tvaroh*, [sfeti:lko] *světýlko*, [sfi:ʰi:] *svítili*¹¹¹; [fefefon] *telefon*, [fifafa] *žirafa*, [fefefec] *jezevec*, [fofa] *sova*, [kafe:, kafí:čko, kafefi:čko] *kafé, kafíčko*. Finally, rare but not exceptional are such examples which represent the fluctuation of f/v; [fen]—[ven],[sofa]—[sova], [jezefec]—[jezevec].

The proper occurrences of /f/ are—in accordance with Czech—those appearing in loan-words¹¹², e.g. various forms of *gramofon*, cf. [mofo:n, mofo:nek, kokofo:n, ga-mafo:n, gagafo:n, glamofo:n] or *telefon*, *telefonovat*, cf. [fefefon, telefo:n, fonovat, fonova:m, telefonat, telefoňit, telefonovat] or *fialový*, cf. [fijalovi:, filajovi, filajkovi:, fijalkovi:] or *fotografovát*, cf. [kafovat, gafovát, glafova:m, fotoglafovát, fotoglať] or *žirafa*, cf. [fifafa, žilafa, žilafa:k].

As regards the place of occurrence, the phoneme /f/ is not limited and occurs word-initially, word-medially and word-finally. Of the three positions, the medial makes up for 50% of the total occurrences of /f/. The initial position comes as second in order of frequency while the final is the least frequent. The proportions are shown in Figure 202. As relates to sound environment, /f/ is not restricted with regard to vocalic phonemes. In a consonantal milieu, however, /f/ combines—as a voiceless consonantal phoneme—only with the voiceless consonants and with the sonants.

The Fricative /v/

Phonetic Realization

Like the voiceless /f/, its voiced counterpart /v/ displayed a rather complicated learning process¹¹³. In the course of the three developmental stages, however, the child finally mastered both the feature of fricativity (the former instability of which was shown in the fluctuation between b/v, cf. [boda]—[voda]) and the feature of labio-dentality (in contradistinction to the earlier stages where /v/ was replaced by the bilabial [w]). Similarly, the distinction of voice might be considered an already mastered feature, though fluctuation between /f/ and /v/ occurs still.

Distribution

The phoneme /v/ ranks as the tenth in the frequency scale of consonants. Its 342 occurrences in the realizations of the first five hundred words amount to 11.7% of the fricative phonemes, 4.1% of the consonantal phonemes and 2.7% of all phonemes counted. In spite of the fact that the frequency count which characterizes /v/ shows an increasing tendency (cf. its zero occurrence in the first-fifty-word period

Positional Distribution

The Fricative //

36.9 %	initial
50.0 %	medial
13.1 %	final

Figure 202

¹¹¹ Similar examples might be found in some Moravian dialects mostly Hanak and Valach. The child, however, did not meet any speaker of such a dialect.

¹¹² On this question, cf. J. Vachek, *Fonologie lexika*, p. 400.

¹¹³ On the question of the phonetic realization of the labio-dental fricatives in child speech cf. Ohnesorg, *Hlásky F, V*, p. 15–20.

with the three occurrences in the first-one-hundred-word period and with 342 occurrences in the first-five-hundred-word period), its functional load in the child's vocabulary is not as high as would be expected in view of its fifth highest place in the frequency orders of Mazlová and Kučera. Its non-existence in nursery forms and the negligible number of occurrences in the interjections which still form a considerable part of the child's vocabulary, explain this discrepancy.

Positional Distribution

The Fricative /v/

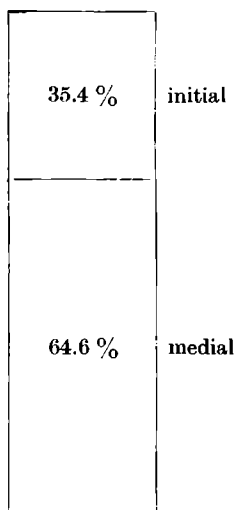


Figure 203

Most of the occurrences of /v/ in the child's idiolect are correct, cf. [*medvi:dek*] *medvídek*, [*vaji:čko*] *vajíčko*, [*vevelka*] *veverka*, [*dvoleček*] *dvoreček*, [*hotovo*] *hotovo*, [*lvi*] *lvi* etc. Of the exceptional occurrences the usage of this phoneme as a hiatic or prothetic consonant might be attributed to the influence of Colloquial Czech, cf. [*vobla:zek*], [*voleji:ček*], [*voshi:ček*], [*voloupa:m*] with the colloquial forms [*vobrázek*], [*voleji:ček*], [*voshi:ček*], [*voloupa:m*]. Moreover, the child employs this phoneme in order to avoid the hiatus between the prefix + stem—a phenomenon alien to both Standard and Colloquial Czech, cf. [*nevuduži:m*] *neudržím*, [*nevuhoři:m*] *neuhodím*. Analogy accounts for further exceptional occurrences of /v/ in the verbal forms such as [*fonova:m*] *telefonuji*, [*pučiva:m*] *půjčuji*, [*volizuna:m*] *olizují*, [*pustiva:me*] *pouštíme* etc.

As regards the place of occurrence, the phoneme /v/ appears in the medial and final positions, in this order of frequency. Due to the neutralization of the feature of

voice word-finally, no occurrence of /v/ is possible in this position. In regard to sound environment, however, /v/ is not restricted and combines freely with all vocalic and all consonantal phonemes. Its neighbourhood to the voiceless consonants is possible because this phoneme, in distinction to all other voiced paired phonemes, does not have the capability of an active regressive assimilation.

Figure 203 indicates the proportion of /v/ in the initial and medial position.

As with the stop phonemes, so too with the fricative phonemes, attention will be confined to the question of which of the paired members is more frequent in the child's vocabulary.

Although, according to some indications, /v/ distributionally is not exactly a voiced counterpart of /f/¹¹⁴ (/f/, as a peripheral phoneme, appears only in loan-words and interjections of onomatopoeic origin or in words derived from such interjections), we, in agreement with M. Romportl¹¹⁵, attribute the phonemic status to both labio-dental fricatives in the child's phonemic inventory, as both of them fulfil the demands for defining phonemes and are capable of differentiating the meanings of words¹¹⁶.

Figures 204—207 show the difference in the distribution of the labio-dental pair in the three developmental stages and in total numbers. As indicated, the first devel-

¹¹⁴ Cf. B. Trnka, *O fonologických cizostech*, p. 23.

¹¹⁵ Cf. M. Romportl, *Souhláskový systém*, p. 275.

¹¹⁶ This holds good, regardless of which of the valid criterion for defining the phonemes is applied, cf. e.g. Trubetzkoy, *Grundzüge der Phonologie*, B. Trnka, *Urcování fonémů* or J. Vachek, *Phonemes and Phonological Units*.

opmental stage has only the voiceless member, in the second the voiceless highly predominates over the voiced. In the third stage, however, the opposite relation appears and the preponderance of the voiced member is shown even in the total numbers. The peripheral character of the voiceless /f/ and the high distribution of the voiced /v/ in the common Czech word-stock accounts for this discrepancy.

Consonant Phonemes

Voiceless *versus* Voiced

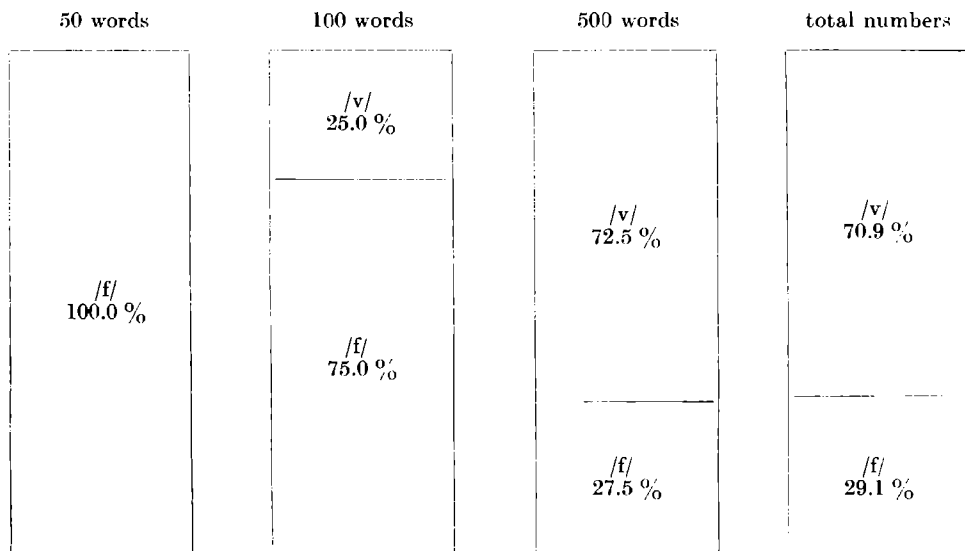


Figure 204

Figure 205

Figure 206

Figure 207

The Fricative /s/

Phonetic Realization

Regardless of the difficult articulation this hissing voiceless sibilant has become stabilized in the course of the three developmental stages, and most of its realizations correspond to the identical phoneme in Standard Czech in all distinctions. The few non-Standard allophones are the result of the operation of palatalization and might be—in all probability—explained as stylistic variants in emotional speech.

Distribution

The phoneme /s/ ranks as ninth in the frequency scale of consonants. Its 366 occurrences in the realizations of the first five hundred words amount to 12.7% of the fricative phonemes, 4.6% of the consonantal phonemes and 2.5% of all phonemes counted. Compared to the previous stages, the steady progress in distribution of this phoneme is evident (cf. its sole occurrence in the first fifty words with 19 occurrences in the first one hundred words and with 366 occurrences in the first five hundred words). Compared to the wide distribution of this phoneme in Czech, however, its

ninth place in our frequency scale hardly corresponds to the first and second place in the frequency scales of Mazlová and Kučera. To explain the discrepancy we can but repeat what has been already said in other places; such phonemes which, because of their difficult phonetic realization, do not appear in the child's fundamental stock of words, are less frequent even in that period when the child has mastered their phonetic realization, as he still prefers those expressions which he had in his earliest developmental stages.

In our data, most of the observed occurrences of /s/ are correct, cf. [sama] sama, [maso] maso, [plasa:tko] prasátko, [husa] husa, [pejsek] pejsek, [pl's:í:čki] prstíčky, [stlomeček] stromeček, [svjetí:lko] světýlko, [splavi:me] spravíme.-- In some instances, /s/ functions as a substitutive sound for the affricate /c/, cf. [nos] noc, [ba:s] bác, [opice] opice, [pa:sášku] plácačku¹¹⁷. This phenomenon, noticed already in the previous stage, appears in most children and supplies further evidence for Jakobson's theory on speech development that the affricate is replaced by the stop /t/ in the earliest stage. As soon as the child masters the fricative articulation, he employs /s/ as its substitute¹¹⁸. Of the exceptional occurrences of /s/, its appearance in the item [busta, bus'lička] should be mentioned. The phoneme /s/ replaces here the proper /x/ cf. the correct forms [buxta, bux'lička]—another phenomenon, not infrequent in Czech children¹¹⁹.

Under emphasis, /s/ appeared in the place of /z/, cf. [sazoť] zahod'. This form occurred in overloud emphatic pronunciation and the desonorization affected both the voiced consonants in the word¹²⁰, while in expressively neutral utterances the correct forms [zahoť] [zaho'í:me] were used.

As regards the place of occurrence, the phoneme /s/ is not limited and occurs word-initially, word-medially and word-finally. Of the three positions, the medial is the most frequent; next in frequency is the initial while the final position shows the lowest occurrence. The proportion is given in Figure 208. In relation to sound environment, /s/ is restricted with regard to consonantal sequence. As a voiceless paired consonant, /s/ is used in complementary distribution with its voiced counterpart /z/ and no occurrence is possible in the neighbourhood of the paired voiced consonants. This restriction, however, does not concern the phoneme /v/ and the sonants. As for vocalic phonemes, /s/ combines freely with any of them.

Positional Distribution

The Fricative /s/

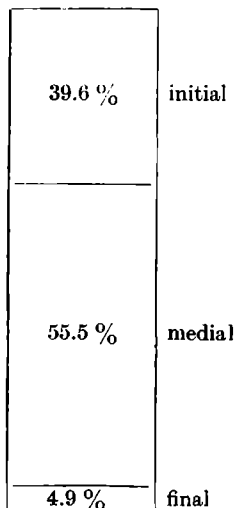


Figure 208

environment, /s/ is restricted with regard to consonantal sequence. As a voiceless paired consonant, /s/ is used in complementary distribution with its voiced counterpart /z/ and no occurrence is possible in the neighbourhood of the paired voiced consonants. This restriction, however, does not concern the phoneme /v/ and the sonants. As for vocalic phonemes, /s/ combines freely with any of them.

¹¹⁷ Similar examples may be found in Ohnesorg, *Fonet. studie II*, p. 36.

¹¹⁸ Cf. R. Jakobson, *Kindersprache*, p. 364.

¹¹⁹ Cf. Ohnesorg, *Fonet. studie II*, p. 32–33.

¹²⁰ This is in accordance with the emphatic speech in adults. Under emphasis, they too replace the correct voiced consonant by its voiceless counterpart.

The Fricative /z/

Phonetic Realization

Like the voiceless /s/, its voiced counterpart /z/ became established in its characteristics as a voiced hissing sibilant phoneme produced in the prae-alveolar area. Except for minor deviations in point of articulation the phonetic realization of /z/ is stable and corresponds to that of the identical phoneme in Standard Czech pronunciation.

Distribution

The phoneme /z/ ranks as nineteenth in the frequency scale of consonants. Its 103 occurrences in the realizations of the first five hundred words amount to 3.5% of the fricative phonemes, 1.2% of the consonantal phonemes and 0.7% of all phonemes counted. When comparing with the previous stages, we find a similar picture as with the voiceless /s/. The number of occurrences of /z/ too, are gradually increasing (cf. its zero occurrence in the first fifty words, 2 occurrences in the first one hundred words and 103 occurrences in the first five hundred words). Nor do the highest figures in the last developmental stage approximate to those which characterize this phoneme in the Czech word-stock, in spite of the fact that /z/ has a comparatively low functional load here (cf. its 13th place in the frequency scales of Mazlová and Kučera) except in verbal prefixes *za-* or *z-* where, in indicating the change of verbal aspect, it appears somewhat more frequently¹²¹. This is also the case where /z/ was observed most frequently in our corpus, cf. [*zaspi:vej*] *zaspívej*, [*zahodil*] *zahodil*, [*zla:malo*] *zlámalo*, [*zva:žnu*] *zvážím*, [*zhoupnu*] *zhoupám* etc. A few examples, illustrating /z/ in other position, follow; [*zoubek*] *zoubek*, [*koza*] *koza*, [*lezeme*] *lezeme*, [*pozol*] *pozor*.

As regards the place of occurrence, the phoneme /z/, being a voiced paired phoneme, is restricted to initial and medial positions. The preponderance of the former position is not surprising after what has been said of the frequent distribution of /z/ in prefixes. In relation to sound environment, no restriction concerns its combination with vocalic phonemes. In consonants, however, the combination with voiced phonemes is the only one possible.

Figure 209 shows the proportionate occurrences of the two positions of /z/.

The comparison between the numbers of occurrences of the voiced and voiceless member of this prae-alveolar pair /s/—/z/ reveals a similar picture as was shown in the majority of the pairs viz. the high preponderance of the voiceless consonant over the voiced one. Figures 210—212 indicate the ratio of the two phonemes in the first, second and third developmental stage. The total numbers are charted in Figure 213.

Positional Distribution

The Fricative /z/

51.5 %	initial
48.5 %	medial

Figure 209

¹²¹ Cf. J. Vachek, *Fonologie lexika*, p. 400.

Consonant Phonemes

Voiceless versus Voiced

50 words

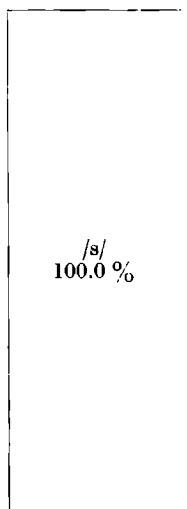


Figure 210

100 words

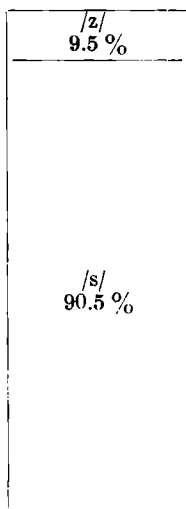


Figure 211

500 words

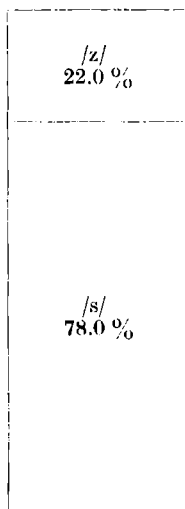


Figure 212

total numbers

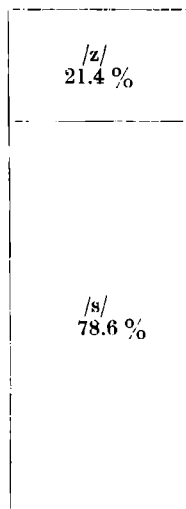


Figure 213

The Fricative /š/

Phonetic Realization

Like the hissing sibilant /s/, the hushing sibilant /š/ has become stabilized in the course of the three developmental stages, and most of its realizations in the last period correspond to that of the identical phoneme in Standard Czech pronunciation in all distinctive features. Contrary to the hissing sounds, no palatalized allophones appear with the hushing sounds.

Distribution

The phoneme /š/ ranks as eleventh in the frequency scale of consonants. Its 311 occurrences in the realizations of the first five hundred words amount to 10.7% of the fricative phonemes, 3.8% of the consonantal phonemes and 2.1% of all phonemes counted. As with all fricative phonemes, so too with /š/ the number of its occurrences increases from one stage to another (cf. 6 occurrences in the first fifty words, 52 occurrences in the first one hundred words and 311 occurrences in the first five hundred words). When compared with the frequency counts reported for Standard Czech, the distribution of /š/ is wider in the child's vocabulary (cf. the 15th place in the frequency scale of Mazlová and Kučera with the 11th in our data). The explanation is easy; besides its proper occurrences, /š/ acts as a substitute for those consonantal phonemes which are either unstable or missing as yet. Of the former, the instances where /š/ replaces the affricate /č/ are the most frequent, cf. [*babiška*] *babička*, [*koleško*] *kolečko*, [*ša:p*] *čáp*, [*haša:*] *hačá*. Illustrating the latter group are

those examples where /š/ functions as a substitute for the apical trill /ř/, namely, its voiceless allophone, cf. [šupat, kšupat] křupat, [šiči:m] křičím, [kšidi:lka] křidélka, [pši-klejva:me] přikrýváme, [tšěšne] třešně, [deš] dveře¹²². Analogy, rather than any phonetic change, accounts for the occurrence of /š/ in place of the voiced /š/ in the diminutive form [nu:šejček] nožíček, cf. [nu:š]—[nu:šejček]. The correct forms, however, also existed in the child's vocabulary, cf. [noži:k], [nožejček].

The following are examples where /š/ appears in the proper place; [puši:] prší, [pipuška] pipuška, [ša:tek] šátek, [šveski] švestky, [piškotek] piškotek, [miš] myš, [nu:š] nůž.

As regards the place of occurrence, the phoneme /š/ is not limited and its appearance in the initial, medial and final positions were recorded. In distribution, /š/ is most frequent word-medially. The initial position follows in point of frequency. The lowest occurrence is reported for the final position, regardless of the fact that three phonemes are represented in the realization of /š/, viz. /š/, /ž/ and /ř/, cf. [piš] piš, [nu:š] nůž, [pošta:š] poštar. The proportion of the three positions is indicated in Figure 214.

As regards the sound environment, no distributional restriction concerns the combinations with vocalic phonemes. In consonants, /š/, like other voiceless paired phonemes, freely combines with voiceless consonants; as for the voiced, however, combination is possible only with /v/ and with sonants.

The Fricative /ž/

Phonetic Realization

As with other sibilant phonemes, so too with /ž/, the phonetic realization has become firmly established at this stage of speech development, and the characteristics of the phoneme /ž/ in the child's pronunciation is identical with that of Standard Czech.

Distribution

The phoneme /ž/ ranks as eighteenth in the frequency scale of consonants. Its 126 occurrences in the realizations of the first five hundred words constitute 4.3% of the fricative phonemes, 1.5% of the consonantal phonemes and 0.9% of all phonemes counted. The low distribution of this phoneme, noticed also in both previous stages, is in agreement with its low distribution in the Czech word-stock (cf. its 22nd place in the frequency scales of Mazlová and Kučera). The comparison of its ranking in the frequency scales of Mazlová and Kučera with that in our data speaks in favour of the latter, indicating thus that /ž/ is more frequent in the child's idiolect compared

Positional Distribution

The Fricative /š/

17.1 %	initial
78.1 %	medial
4.8 %	final

Figure 214

¹²² Similar observations may be found in any Czech-speaking child. The employment of the voiceless fricative /š/ to replace the difficult /ř/ is identical with the usage of foreigners who do not have /ř/ in their phonemic systems.

Positional Distribution

The Fricative /ž/

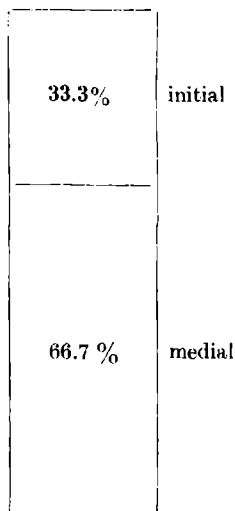


Figure 215

to the speech of adults. This is, undoubtedly, due to the fact that the two phonemes are encompassed within the realization of /ž/, viz. /ž/ and /ř/ while /ř/ is more frequent in Czech than is /ž/ (cf. the 19th and the 22nd place of the two phonemes as reported by Mazlová and Kučera).

What follows will illustrate the proper occurrences of /ž/, as well as those occurrences where /ž/ functions as a substitute for the voiced allophone of /ř/; [ža:ba] *žába*, [žlička] *lžička*, (dežet) *držet*, [ži:žala] *žížala*, [bažant] *bažant* etc; [jiži:] *Jiří*, [na dvože] *na dvoře*, [žeben] *lřeбен*, [žebi:k] *hřebík*, [pežina] *peřina*, [zavži:t] *zavřít*, [dži:vi:] *dříví* etc. Sound assimilation accounts for occurrence of /ž/ in the following items; [žezek] *ježek*, [žežček] *ježeček*, [žežeci] *ježecci*.

As regards the place of occurrence, the phoneme /ž/ is restricted to the word-medial and word-final position, in the said order of frequency. The proportion of the two positions is shown in Figure 215. Because of the neutralization of the feature of voice word-finally, the occurrence of /ž/ is not possible in that position. The restriction concerns the sound environment too. Being used in complementary distribution with /š/, /ž/ combines only with voiced consonants, in which the sonants are the most frequent. In combining

Consonant Phonemes

Voiceless *versus* Voiced

50 words

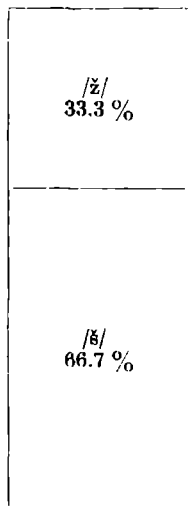


Figure 216

100 words

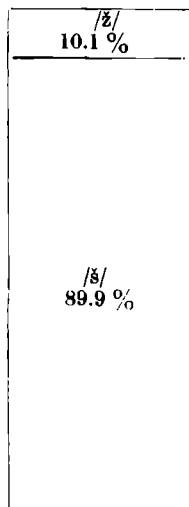


Figure 217

500 words

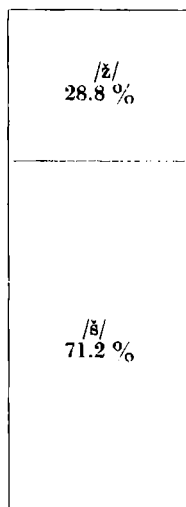


Figure 218

total numbers

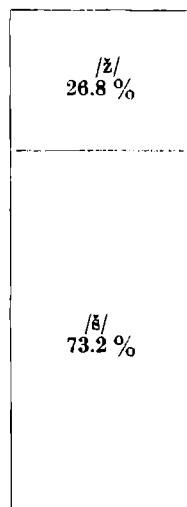


Figure 219

with vowels, however, /ž/ is not limited. The same holds good for /ž/ when in the function of the substitute for /ř/.

Like other consonantal pairs, the pair /š/—/ž/ will be dealt with in regard to their distribution in the three developmental stages. As the proportions in Figures 216—219 indicate, the voiceless member is obviously preponderant in the first, second and third developmental stage and so too in the total numbers.

The Fricative /j/

Phonetic Realization

The stability of the phonetic realization of the phoneme /j/ has been reported in both previous stages. Its character as a palatal fricative consonantal phoneme, voiced but not opposed to any other phoneme solely by this feature, is fully identical with that of Standard Czech.

Distribution

The phoneme /j/ ranks as twelfth in the frequency scale of consonants. Its 303 occurrences in the realizations of the first five hundred words amount to 10.4% of the fricative phonemes, 3.7% of the consonant phonemes and 2.1% of all phonemes counted. Compared to previous stages, the frequency counts which represent the phoneme /j/ are decreasing (cf. its 8th, 9th and 12th place in the frequency scale of the first, second and third stage respectively). In view of what has been said on the frequent occurrence of /j/ in the function of a substitutive sound for /l/ and /r/ in the first fifty and first one hundred words, the decrease is not surprising in the vocabulary of five hundred words, where /j/ has lost this substitutive function in most cases. The phoneme /l/, being firmly established in this developmental stage, not only appears in all of its proper occurrences but has come to replace also the vibrant /r/, in other words, it takes over this substitutive function from /j/. The few examples where /j/ is preserved represent the older developmental stages, while in those words which appear as new in the vocabulary, no occurrence of this phoneme was recorded. Furthermore, the nursery words and interjections, where /j/ had a wide distribution, are in a minority now. Last but not least, the child, in speaking of himself, does not use his own name *Jiří* as often as before and similarly, the personal pronoun [ja:] is rare as the child had mastered the inflected forms of verbs.¹²³ In comparing the functional load of /j/ in our data with that reported for Czech, the latter slightly prevails (cf. its 12th and 9th place in the two frequency scales of consonants).

Most of the occurrences of /j/ are correct, cf. [javi:ško] *jablíčko*, [ja:tla] *játra*,

Positional Distribution

The Fricative /j/

29.0 %	initial
51.5 %	medial
19.5 %	final

Figure 220

¹²³ In Czech, as in most of the synthetic languages, the use of personal pronouns with inflected verbal forms is not necessary.

[ušijeme] ušijeme, [leje] leje, [děkuju] děkuji, [čaj] čaj. The influence of Colloquial Czech, where the Standard -ý- underwent the change into -ej-, is evident in the following examples; [napapanej] napapaný, [čelnej] černý, [dlouhej] dlouhý, [pšíklejt] pšíkřít, [stlejšda] strýc. Instances like [papaji:] (3rd person plural of the present) and [papali] (3rd person plural of the preterite) illustrate the phonologization of the two consonants /j/ and /l/ in this developmental stage; in both previous stages, on the other hand, the sole form [papaji] (the final vowel being either short or long) represented both the tenses. The older developmental stage is reflected in the following examples; [jopata] lopata, [jošiška] lodička, [beja:nek] beránek, [pjasa:tko] prasátko. Distant dissimilation, on the other hand, accounts for the occurrence of /j/ in the place of /n/ in the item [baja:n] bandán.

As far as the place of occurrence is concerned, the phoneme /j/ is not limited and occurs word-medially, word-initially and word-finally, in the said order of frequency. The proportions are shown in Figure 220. Similarly, no restriction concerns the sound environment and /j/ freely combines with all vocalic and all consonantal phonemes.

The Fricative /x/

Phonetic Realization

The phonetic realization of this voiceless velar fricative phoneme is stable and fully corresponds to that of the identical phoneme in Standard Czech.

Distribution

The phoneme /x/ ranks as twenty-second in the frequency scale of consonants. Its 80 occurrences in the realizations of the first five hundred words amount to 2.7% of the fricative phonemes, 0.9% of the consonantal phonemes and 0.5% of all phonemes counted. Its low functional load in the child's vocabulary, noticed in the two previous developmental stages, is evident in this third too, though besides its proper occurrences /x/ is still found in fluctuation with /h/, cf. [xavička] hlavička, [koxo:tek] kohoutek, [xolčička] holčička, [douxej] dlouhý, [poxa:tká] pohádka. It should be mentioned here, however, that all these forms have parallels, where the proper /h/ occurs. A few examples illustrating the proper occurrence of /x/ follow; [xovat] chovat, [xlebi:ček] chlebiček, [muxomu:lka] muchomůrka, [pixa:] píchá, [nexti:ček] nehtiček, [fšixňi] všichni, [lixle] rychle, [tvalox] tvaroh.

A comparison with the numerical data reported by Mazlová and Kučera shows the wider distribution of /x/ in Standard Czech (cf. its 17th place there with our 22nd). The different grammatical structure of the child's vocabulary might help to explain this discrepancy. The child, as was shown in many comparative studies on speech development, uses neither the inflected cases nor the prepositional constructions in his first developmental stages, but is satisfied with simple nominative and accu-

Positional Distribution

The Fricative /x/

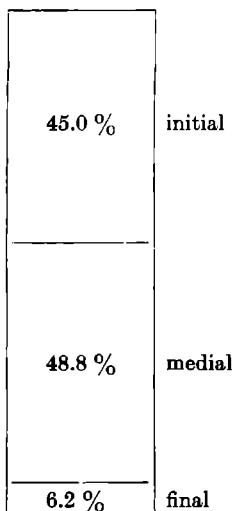


Figure 221

sative. As the phoneme /x/ appears mostly in the endings of genitive and locative plural (of which but two instances were recorded in the child observed, viz. [ve voči:x] v očích and [v hajana:x] v hajánách), its lower frequency under such circumstances is to be expected.

As far as the place of occurrence is concerned, the phoneme /x/ is not limited and occurs in the initial, medial and final position. Of these, the occurrences in the medial and initial position are almost balanced while /x/ in the final position is far less frequent. The proportions of its initial, medial and final occurrences are shown in Figure 221.

As regards the sound environment, no restriction concerns the combination of /x/ with vowels. Among consonants, /x/ behaves like other voiceless paired consonantal phonemes and combines freely with voiceless consonants, with /v/ and with sonants. Its voiced allophone [ɣ] which is due in the voiced surroundings, has not yet appeared in the child's consonantal system¹²⁴.

The Fricative /h/

Phonetic Realization

The establishment of /h/ underwent a different process as compared with other fricative phonemes. Here is its rough outline: stable phonetic realization was reported in the first-fifty-word period. The phoneme was, however, restricted in a considerable way with regard to distribution and occurred only in interjections and nursery forms. In the first-one-hundred-word period, where fluctuation between voiced and voiceless fricatives was a typical phenomenon, the voiced phoneme /h/ was replaced by the voiceless /x/ in all new expressions, while the old were preserved unchanged. In the period of the first five hundred words the phonetic realization of the voiced /h/ became stabilized to such an extent that even in the new expressions the correct /h/ prevails over the substitutive /x/.

Distribution

The phoneme /h/ ranks as fourteenth in the frequency scale of consonants. Its 220 occurrences in the realizations of the first five hundred words amount to 7.5% of the fricative phonemes, 2.7% of the consonantal phonemes and 1.5% of all phonemes counted. The gradual decrease in the frequency scale in the three developmental stages corresponds to the figure which characterizes its functional load in Czech (cf. its identical 14th place in our data, in Mazlová and in Kučera).

Most of the occurrences of /h/ are correct. The following are examples for illustration of this fact; [hučet] hučet, [houpat] houpat, [hop] hop, [hotovo.] hotovo [had.] hadr,

Positional Distribution
The Fricative /h/

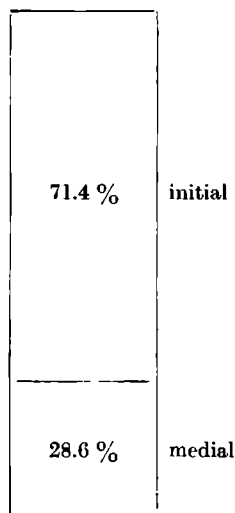
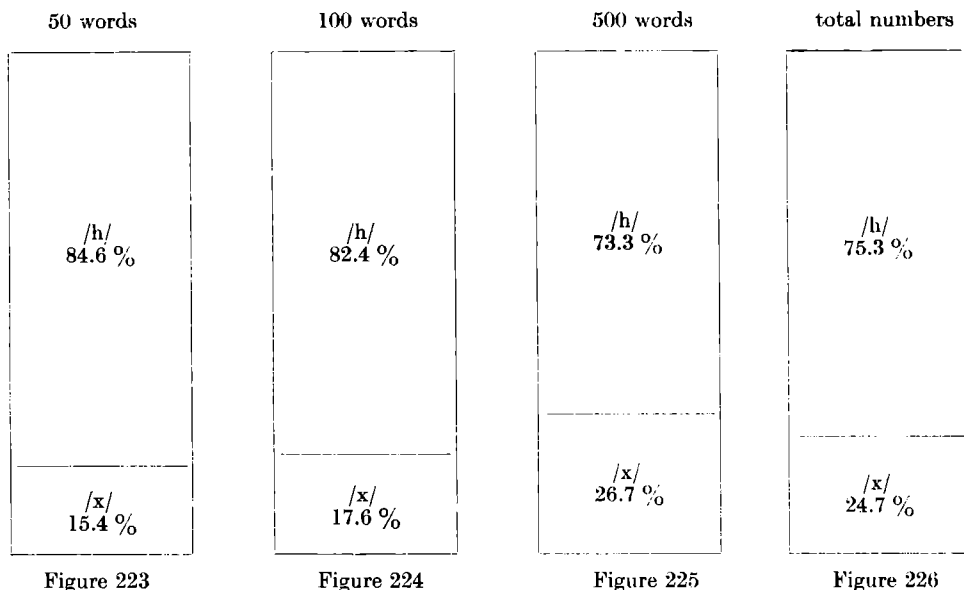


Figure 222

¹²⁴ On this question cf. H. Kučera, *Phonology*, p. 35 where the author classifies this sound as the voiced allophone of /h/ in regard to phonemics.

Consonant Phonemes

Voiceless *versus* Voiced



[*kalhoti*] *kalhoty*, [*hlavička*] *hlavička*, [*lost|hat*] *rozrhat*, [*ut|hnout*] *utrhnout*. The regressive sound assimilation accounts for its occurrence in the item [*hohlí:k*] *rohlík*.

As far as the place of occurrence is concerned, /h/ is restricted to the initial and medial positions. Due to the neutralization of the feature of voice, its occurrence is excluded in the final position. As in both previous stages, so too in this third one the initial /h/ conspicuously predominates over the medial. The proportion is shown in Figure 222.

As regards the sound environment, /h/ combines mostly with vowels. In consonants, its combination is fairly frequent with sonants, while the sequence of other voiced consonants is more or less exceptional. Being used in complementary distribution with /x/, no occurrence of /h/ is possible in the voiceless environment.

Despite some articulatory difficulties we identify the phonematic relation of /x|—/h/ with that of /s|—/z/, /š|—/ž/ and the like¹²⁵ and therefore, as with the other pairs, the comparison is made as to which of the members, voiceless or voiced, is more widely distributed in the child's vocabulary. Figures 223—226 indicate that in contrast to the majority of consonantal pairs, the voiced member is strikingly predominant in all the three developmental stages and so too in the total numbers. The preponderance of /h/ over /x/ is typical of Czech, too, and is to be ascribed to the special and shorter history of this contrastive pair in the development of the language system in Czech, as has already rightly been pointed out by Trubetzkoy¹²⁶.

¹²⁵ A similar approach may be found in Mathesius, *Čeština a obecný jazykozpyt* p. 68, M. Romportl, *Souhláskový systém*, p. 273 and H. Kučera, *Phonology of Czech*, p. 35.

¹²⁶ Cf. N. S. Trubetzkoy, *Grundzüge der Phonologie*.

The Lateral /l/

Phonetic Realization

After a more complicated learning process the phonetic realization of /l/ has become established in this developmental stage and its characteristics as a voiced alveolar lateral fricative may be identified in all distinctive features with those of Standard Czech. The more or less palatalized allophones, noticed in this phoneme in the previous stage, have very few occurrences now. Furthermore, in the establishment of the syllabic allophone of /l/ the mastering of another distinction in this phoneme is manifested, viz. the contrast of liquid *versus* consonant.

Distribution

The phoneme /l/ ranks as the second highest in the frequency scale of consonants. Its 938 occurrences in the realizations of the first five hundred words amount to 32.1% of the fricative phonemes, 11.4% of the consonantal phonemes and 6.4% of all phonemes counted. In spite of the fact that /l/ belonged to those consonantal phonemes which were fairly distributed in the first-fifty and first-one-hundred-word period, neither the numerical data nor its ranking in the frequency scale of consonants approximate to that of Standard Czech. Only the remarkable increase of its distribution in the vocabulary in the latest period made the child's /l/ a corresponding equivalent of Standard Czech /l/ (cf. its second highest place in our data with its second and first place in the frequency scales of Mazlová and Kučera). Two factors account for the conspicuous increase in distribution of the phoneme /l/, aside from the fact that it has the leading position among Czech consonantal phonemes. First, its phonetic realization being firmly established, the phoneme /l/ is not replaced by other substitutive sounds as before, and occurs in all of its proper places. cf. [mala:] malá, [balon] balon, [kolečko] kolečko, [kalhotki] kalhotky, [hlavička] hlavička, [dudli:k] dudlík, [holčička] holčička, [lokomotiva] lokomotiva, [liška] liška, [zeblal] zebrał etc. Besides, /l/ has become the main substitutive sound instead of /r/ and replaces this phoneme both in its consonantal and vocalic function, cf. [lizle] rychle, [lučički] ru-

Positional Distribution

The Lateral /l/

9.3 %	initial
84.9 %	medial
5.8 %	final

Figure 227

čičky, [la:na] rána, [á:ila] díra, [moxomu:lka] muchomůrka, [klavička] klavička, [papi:l] papír, [kalvi:l] klavír; [hadl] hadr, [tigl] tygr, [hlneček] hrneček, [vism|knu] výsmrkám, [škl'i:] škrtí.

As far as the place of occurrence is concerned, the phoneme /l/ is not limited. The proportions of its initial, medial nad final position are shown in Figure 227. As indicated, /l/ in the medial position exhibits a large preponderance, as compared with the two other positions.

As regards the sound environment, no restriction affects the phoneme /l/ either in vocalic or in consonantal milieu.

The Vibrants /r/ and /ř/

As was expected in view of other findings on speech development, both the vibrants /r/ and /ř/ are absent from the consonantal system in the child and are replaced in all instances. While the learning process in all other consonantal phonemes might be considered as being accomplished in the realizations of the first five hundred words, it has not yet started as far as the phonetic realization of /r/ is concerned. The sole occurrence of [R] in the interjection [bRm] does not signalize the beginning of the stage when the child comes to master this vibrant phoneme, for the following reason: in the cited example the child tried to express the act of drinking and the nursery form [bumbat] served him, in all probability, as a basis. It has been shown before that a purely imitative sound appearing in interjections may not be identified with the phoneme. Furthermore, both the point and manner of articulation differed markedly: while [R] in the child's pronunciation was produced in the bilabial area and the lips performed the vibration, the Standard [r] is produced at the alveolar point and the tip of the tongue is responsible for the vibration. Only six months later, at the age of 2, 6, 0 the correct /r/ appears in the child, in combination with the alveolar stop /t/ at first. Then followed its combinations with other consonantal phonemes. Its stabilization in the intervocalic environment appeared as next and its word-initial and word-final position as the last in order.

Before dealing with the other vibrant consonant, i.e. /ř/, as it is reproduced by the child in the period when he has not yet mastered the feature of vibrativity, a few comments will be made on this consonantal phoneme in Czech.

The phoneme /ř/ has two allophones, a voiced [ř] and a voiceless [ř̥] which occur in complementary distribution. The voiced allophone appears word-initially, while in the medial position only its combination with a voiced consonant or with vowels is possible. The voiceless allophone, on the other hand, occurs in word-final, and—in combination with voiceless consonants — in word-medial position. In distinction to other consonants, the quality of /ř/ is determined not by the consonant which follows but by that which precedes, in other words, the regressive assimilation, typical of Czech, is here replaced by the progressive type. The special status of the two allophones of /ř/ is best shown in their comparison with other pairs of consonants. Here is a rough outline:

In the pairs p/b, t/d, t/ď, s/z, f/v, x/h, assimilation accounts for the neutralization of the contrast voiced *versus* voiceless.

In k/g, c/z and č/ž the operation of voice assimilation results in complementary distribution of two allophones of an identical phoneme.

The sonants r, l, m, ň, j, on the other hand, are not capable of active assimilation, and their being assimilated in a passive way is excluded, as none of the sonants has a voiceless counterpart in Czech.

The vibrant /ř/ is outside the system. It has the active capability to assimilate only in sandhi relation, cf. [nad řekou] nad řekou, [g řece] k řece, [tag řečeni:] tak řečený, and even this capability is potential as the following examples illustrate: [jak ři:ka:] jak říká, [splaf řeki] splav řeky. In other words, in this position, /ř/ behaves like a sonant; in word-final position, on the other hand, the voiceless ř̥ is replaced by the voiced [ř] when the voiced paired consonant follows in the next words, cf.

[*uvař brambory*] *uvař brambory*. In other words, in the final position /ř/ behaves like a paired consonant; within the word, /ř/ has only passive assimilative capability, as shown in the two examples [tři:li]—[dři:li] *třítí, dřítí*. In this position then, together with /v/ and /h/, which are assimilated in the same way in the dialectal pronunciation, (cf. [křjet] *květ*, [szoda] *shoda*¹²⁷) the phoneme /ř/ forms a special group in the Czech consonantal system, ranking between the sonants and paired consonants¹²⁸.

After having displayed the characteristics of /ř/ in Standard Czech, we will turn our attention to the question of how this phoneme is dealt with by the child. The fact that it does not occur in its proper phonetic realization in early developmental stages was mentioned before. The question which remains to be solved is, however, whether the child, in substituting this phoneme, differentiates between its voiced and voiceless allophones. On the ground of detailed analysis of our data it might be taken for granted that the feature of voice is fairly stable with all the substitutes for Standard Czech [ř] and [ř̥], and that already at the stage of the simplified consonantal clusters, i.e. in the period where no assimilation, active or passive, has its *raison d'être*. A few examples follow for illustration; the words *křičet*, *křídélka*, *křupat* were realized as [šičet], [šidi:lka], [šupat] before they achieved the more refined forms [kšičet], [kšidi:lka], [kšupat]. Similarly, the cluster [tř] was realized as [č] in the earlier forms, cf. [či:kolka] *třikolka*, [češnički] *třešničky*. With the appearance of the consonantal clusters the quoted forms were replaced by [tši:kolka], [tšešnički]. In the cluster [př], /ř/ was dissimilated at first, cf. [pinese] *prinese*, [pikajt] *přikrát*. With the stabilization of the consonantal clusters, the forms [pšinese], [pšikajt] became common. As for the voiceless [ř̥] in the final position, it was replaced by /š/ in all instances, cf. [kouš], [uvaš] *uvař*. The child, nevertheless, is aware of the difference of meanings between the items *uvař/važ* though they are homophones in his pronunciation, cf. [uvaš mašličku] *važ mašličku*, [uvaš polivěčku] *uvař polivečku*.

The voiced [ř] was realized as [ž] at first, cf. [ževo] *dřevo*, [ži:f] *dřív*. Soon afterwards, however, the substitutive sibilant was replaced by the affricate [ž̥], cf. [ževo], [ži:f]. As in the cluster [př], so too in the cluster [bř], the phoneme /ř/ was dropped in earlier stages, cf. [bi:ško] *bříško*, and replaced by [ž̥] in the later ones, cf. [bži:ško]. The cluster [hř] appears as [ž̥], cf. [žebi:k] *hřebík*, [ži:bek] *hříbek*, [žište] *hřiště*. After the mastering of consonantal cluster the realization of the quoted examples was the following: [hžebi:k], [hži:bek], [hžište]. As for the voiced [ř] in word initial and intervocalic position, it was always replaced by [ž], cf. [žada] *řada*, [ži:kat] *řikat*, [uvažit] *uvařit*, [koužit] *kouřit*.

All the above-cited examples bear evidence of the child's awareness of the contrast voiced *versus* voiceless within the phoneme /ř/. What is, however, of interest, is the fact that the child imitates the assimilative capability of /ř/ in the same way as is common in the speech of adults, though two phonemes, viz. /ž/ and /š/ act as its substitution¹²⁹; while in the onset the voiced [ř] realized as [ž] actively assimilates the preceding voiceless preposition, cf. [g žece] *k řece*, it is passively assimilated according to the preceding consonant in the medial position, cf. [kši:da]—[dževo], and appears as a voiceless [š] in the final position. As such, however, it is assimilated

¹²⁷ This form, however, being a local variant of Prague Czech, has found its foothold in the Standard pronunciation at present.

¹²⁸ For particulars, cf. P. Zima, *Souhláska ř v českém systému znělostní asimilace*, pp. 36—43.

¹²⁹ On the question of /ž/, /š/ acting as substitutive sounds for /ř/ cf. the interesting observation of R. Jakobson, quoted in *Kindersprache*, p. 366; Czech emigrants to Russia stop using the vibrant /ř/ soon after arrival and replace it by the fricatives /ž/ or /š/.

to [ž] when the voiced paired consonant follows, cf. [*uvaš polívečku*]—[*uvaž blambu:čku*] *uvař polívečku* — *uvař brambory*.

Summary

After the characteristics of the separate fricative phonemes as they were realized in the child's vocabulary in this period a summary follows:

In accordance with Czech, there are four pairs of fricative consonants which appear in the phonological relation, viz. /f/—/v/, /s/—/z/, /š/—/ž/, /x/—/h/. Their phonetic realization might be considered as mastered though not to such an extent as with the stops. The existence of the non-standard variants in some of the fricative phonemes betrays their lesser stability. The palatal /j/ and the lateral /l/ complete the system of fricatives in the child. Compared to that of Standard Czech, the vibrants /r/ and /ř/ are absent.

The Fricative Consonants

	Initial		Medial		Final		Total numbers			
							fricatives	consonants	phonemes	
<i>i</i>	48	36.9 %	65	50.0 %	17	13.1 %	130	4.5 %	1.6 %	0.9 %
<i>v</i>	121	35.4 %	221	64.6 %	—	—	342	11.7 %	4.1 %	2.4 %
<i>s</i>	145	39.6 %	203	55.5 %	18	4.9 %	366	12.5 %	4.4 %	2.5 %
<i>z</i>	53	51.5 %	50	48.5 %	—	—	103	3.5 %	1.2 %	0.7 %
<i>š</i>	53	17.1 %	243	78.1 %	15	4.8 %	311	10.7 %	3.8 %	2.1 %
<i>ž</i>	42	33.3 %	84	66.7 %	—	—	126	4.3 %	1.5 %	0.9 %
<i>x</i>	36	45.0 %	39	48.8 %	5	6.2 %	80	2.7 %	0.9 %	0.5 %
<i>h</i>	157	71.4 %	63	28.6 %	—	—	220	7.7 %	2.7 %	1.5 %
<i>l</i>	87	9.3 %	797	84.9 %	54	5.8 %	938	32.1 %	11.4 %	6.4 %
<i>j</i>	88	29.0 %	156	51.5 %	59	19.5 %	303	10.4 %	3.7 %	2.1 %
<i>r</i>	—	—	1	100.0 %	—	—	1	0.1 %	0.1 %	0.0 %
<i>ř</i>	—	—	—	—	—	—	—	—	—	—
Total	830	28.4 %	1 922	65.8 %	168	5.8 %	2 920	100.0 %	35.4 %	20.1 %

Figure 228

In distinction to stops, where the numerical data characterizing the consonant occurrences in the child's vocabulary, and those reported for Standard Czech did exhibit a similar picture, there are still considerable differences as regards the frequency of fricatives. The discrepancy shows mostly in the voiced members /v/ and /z/, which, due to the difficult phonetic realization, are not as a rule distributed in nursery forms and are therefore less frequent in the child's word-stock. The opposite relation, i.e. the wider distribution in the child's idiolect as compared to the speech of adults, concerns the phonemes /š/ and /ž/. The higher functional load of /š/ is easily explicable on the ground of the fact that this phoneme, apart from its own occurrences, acts as a substitute for other consonants. The wide distribution of /ž/ in interjections is the most plausible explanation for its higher frequency in the child's vocabulary.

In terms of features, the fricative articulation has been firmly established in both voiceless and voiced members. Of the further distinctions which are based on manner of articulation, laterality is a well-learned feature. Vibrativity, however, remains

inaccessible even in this third developmental stage, thus bearing Jakobson out in his statement that relatively rare distinctive features in the languages of the world are learned late by children in their mother tongue.

As for the distinctions based on points of articulation, the contrast front *versus* back is well established and so are, with minor exceptions, all the points of articulation which have their relevance in Czech, viz. the articulation in the labio-dental, prae- and post-alveolar, palatal, velar and laryngeal areas. In regard to frequency of the fricatives which represent the said features, the front show wider distribution than do the back. A more detailed analysis indicates that the majority of the fricatives are produced in the alveolar area and that as second in order come the labio-dentals. The remainder of the articulatory areas, represented by one fricative each, appear in the following order of frequency: palatal /j/, laryngeal /h/, velar /x/. Figures 229 and 230 show the proportions of the fricatives in regard to their point of articulation.

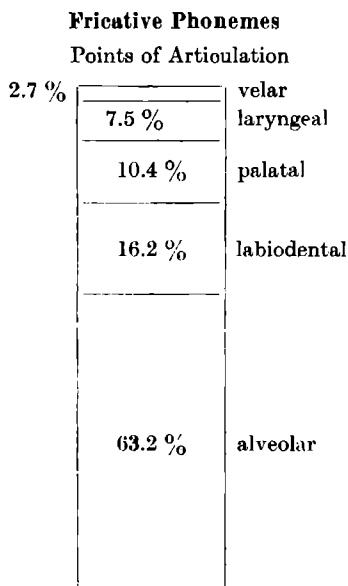


Figure 229

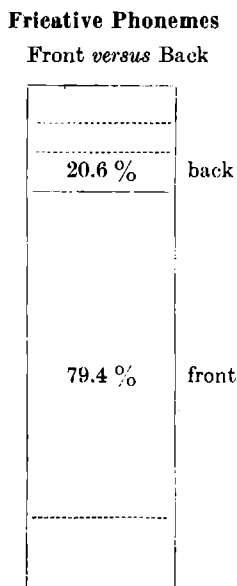


Figure 230

In contradistinction to the previous stage where the feature of voice displayed a certain instability, it is now established, and the contrast voiced *versus* voiceless is preserved in most instances. As in the first and second stage, so too in this third, the total number of voiced fricatives prevail over the voiceless. Figure 231 shows the ratio of the two groups. With regard to the paired fricatives, the predominance of the voiceless members, noticed before, is preserved. Figure 232 displays, however, an almost balanced ratio. The opposite relation of the two pairs /f|—|v| and |x|—|h|, where the voiced members are obviously preponderant, accounts for this equalizing.

No additional features in fricative phonemes appeared at this stage of speech development.

Fricative Phonemes
Voiceless *versus* Voiced

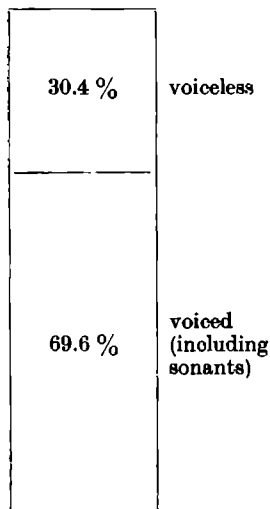


Figure 231

Fricative Phonemes
Voiceless *versus* Voiced

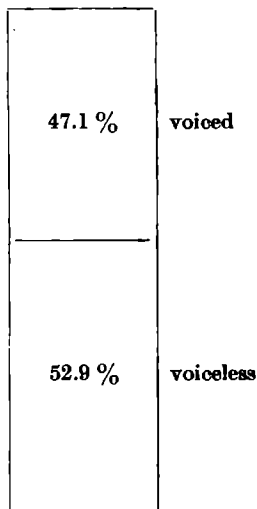


Figure 232

THE SEMI-OCCLUSIVE CONSONANTS

The Affricate /c/

Phonetic Realization

The phoneme /c/ is to be ranked among those whose phonetic realization undergoes a complicated learning process. Though the proper semi-occlusive articulation appears in this developmental stage in this consonant, its replacement by the fricative or—in older expressions—even the by the stop, is not exceptional. Instability is shown too, as far as the correct point of articulation is concerned, as the existence of the palatalized allophones illustrates.

Distribution

The phoneme /c/ ranks as sixteenth in the frequency scale of consonants. Its 161 occurrences in the realizations of the first five hundred words constitute 23.5% of the semi-occlusive phonemes, 1.9% of the consonantal phonemes and 1.9% of all phonemes counted. In view of the fact that /c/ is still replaced by /s/ or /t/ its more favoured ranking in our frequency scale of consonants, as compared to that reported for Standard Czech, is surprising (cf. our 16th with the 18th and 17th place in Mazlová and Kučera). Its wide distribution in interjections and nursery forms derived from them is a sufficient explanation for this discrepancy.

Most of the occurrences of /c/ are correct, as the standard correlates of the following examples illustrate; [co] *co*, [oblacova:m] *obracím*, [žica] *lžice*, [blouci] *brouci*, [plac:e] *práce*, [pecka] *pecka*, [kobelec] *koberec*, [ňic] *nic*. The following are the occurrences of /c/ in interjectional forms; [ba:c], [bumba:c], [ciŋk], [ciliŋk], [zacin̄knu], [duc], [du-

ca:m], [ducaneč], [cucat], [cucnu]. The sound assimilation and assimilation of manner of articulation accounts for such forms as [cancuže] tancuže, [cancuvala] tancuvala, [kapsička] kapsička.

As far as the place of occurrence is concerned, /c/ is not limited and occurs in initial, medial and final positions. The greatest numbers appear for its occurrence in the medial position, where, too, its stabilization as a semi-occlusive phoneme first appeared. The occurrences of /c/ in the initial and final positions are balanced; the figures, however, might reflect the fact that /c/ is often replaced in both these positions, in the initial perhaps more frequently. Figure 233 shows the proportion of the three positions.

As regards the sound environment, /c/ combines with all vocalic phonemes. In consonants, however, /c/ as a voiceless phoneme is restricted to a voiceless milieu except for sonants.

The voiced allophone [ʒ] occurred once and the sandhi assimilation of voice accounts for its appearance in the child's vocabulary, cf. [duz duc] duc duc.

Positional Distribution

The Affricate /c/

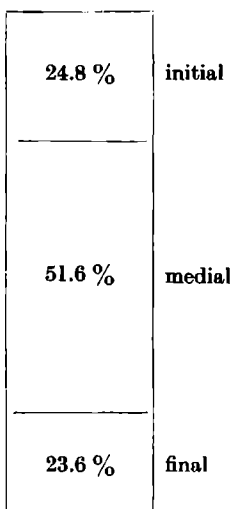


Figure 233

Positional Distribution

The Affricate /č/

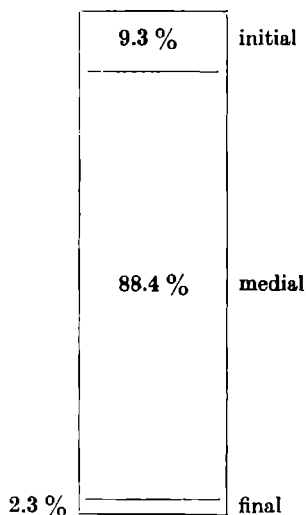


Figure 234

The Affricate /č/

Phonetic Realization

Compared to the prae-alveolar /c/ the phonetic realization of this post-alveolar affricate seems to be more stable. Its proper semi-occlusive articulation is realized in most of the instances which appeared as new in this developmental stage and only in the older expressions /č/ is still replaced by the fricative /š/. Its substitution by /t/ is very exceptional. In distinction to /c/ no palatalized allophones appear in this phoneme.

The Semi-occlusive Consonants

	Initial		Medial		Final		Total numbers			
							affricates	consonants	phonemes	
c	40	24.8 %	83	51.6 %	38	23.6 %	161	23.5 %	1.9 %	1.1 %
ɕ	49	9.3 %	463	88.4 %	12	2.3 %	524	76.5 %	6.4 %	3.6 %
Total	89	13.0 %	546	79.7 %	50	7.3 %	685	100.0 %	8.3 %	4.7 %

Figure 235

Distribution

The phoneme /č/ ranks as the fourth highest in the frequency scale of consonants. Its 524 occurrences in the realizations of the first five hundred words constitute 76.5% of the semi-occlusive phonemes, 6.4% of the consonantal phonemes and 3.6% of all phonemes counted. This frequency count registers the highest discrepancy in all consonants as compared to the frequency count which characterizes the identical phoneme in the Czech word-stock, cf. its 4th highest place in our frequency scale with the 21st and 18th place in the scales of Mazlová and Kučera. The special content of the child's vocabulary, where the majority of nouns are in diminutive forms, having thus /č/ in their suffixes, readily explains this discrepancy. Though most of the diminutives have their equivalents in Standard Czech, they have, in distinction to the speech of the child observed, minimal occurrences in the speech of the adults on which the above mentioned numerical data are based.

Semi-occlusive Phonemes

Points of Articulation

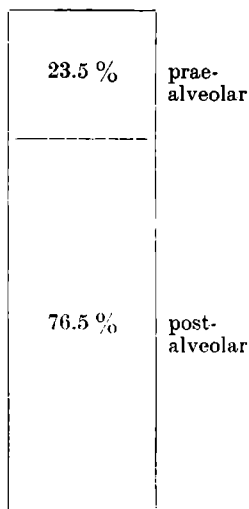


Figure 236

The following are examples of occurrences of /č/ both in diminutives and other expressions: [babička] *babička*, [vla:ček] *vláček*, *vlak*, [kolečko] *kolečko*, *kolo*, [klučina] *klučina*, *kluk*, [čeli:čko] *čelíčko*, *čelo*, [botički] *botičky*, *boty*, [ručička] *ručička*, *ruka*; [hučet] *hučet*, [či:st] *číst*, [učesat] *učesat*, [čisti:] *čistý*, [čel] *čert*. As an exceptional usage its occurrence in the substitutive function for the consonantal cluster [tʃ] should be mentioned here; cf. [či:kolka], *tříkolka*, [češinky] *třešinky*, [uči] *utři* etc.

As far as the place of occurrence is concerned, /č/ is not limited and occurs word-initially, word-medially and word-finally. The occurrences are, however, very unequal as regards the frequency. To explain the striking preponderance of /č/ in the medial position, its occurrence in the diminutives has to be recalled once again. Of the three positions, this is the first where /č/ became stabilized as a semi-occlusive consonant. Figure 234 shows the proportions of the initial, medial and final occurrence of /č/.

As regards the sound environment, /č/ being a voiceless consonant, it combines with voiceless phonemes and sonants. No restriction affects its combina-

tion with vowels, the neighbourhood of the front vowels is, however, more frequent.

The voiced allophone of /č/ which is distributed in the voiced consonantal environment in Czech, did not appear in this position in the child's speech. Its occurrence was, however, noticed in the consonantal cluster *dř-* where [ʒ] functioned as one of the early substitutes, cf. [ʒevo] *dřevo*, [ʒi:f] *dřív*.

Summary

As with the stops and fricatives, so too the affricates will be summarized:

The child has two affricates in his system, viz. /c/ and /č/. Only the affricate /c/ has its voiced allophone in [z], used in complementary distribution, where the voiced *versus* voiceless feature is predictable. The voiced allophone of /č/, on the other hand, appears as a substitute for the as yet un-mastered consonantal cluster [dř].

Of the two phonemes, the latter is far more frequent. As for the phonetic realization, the feature of semi-occlusivity is but imperfectly learned and instability shows also in the prae-alveolar point of articulation. The comparison of the numerical data concerning the affricates in our corpus with those reported by Mazlová and Kučera, shows a wider distribution of /č/ in the child. No discrepancy in frequency, on the other hand, relates to the phoneme /c/.

Consonant Phoneme Frequencies

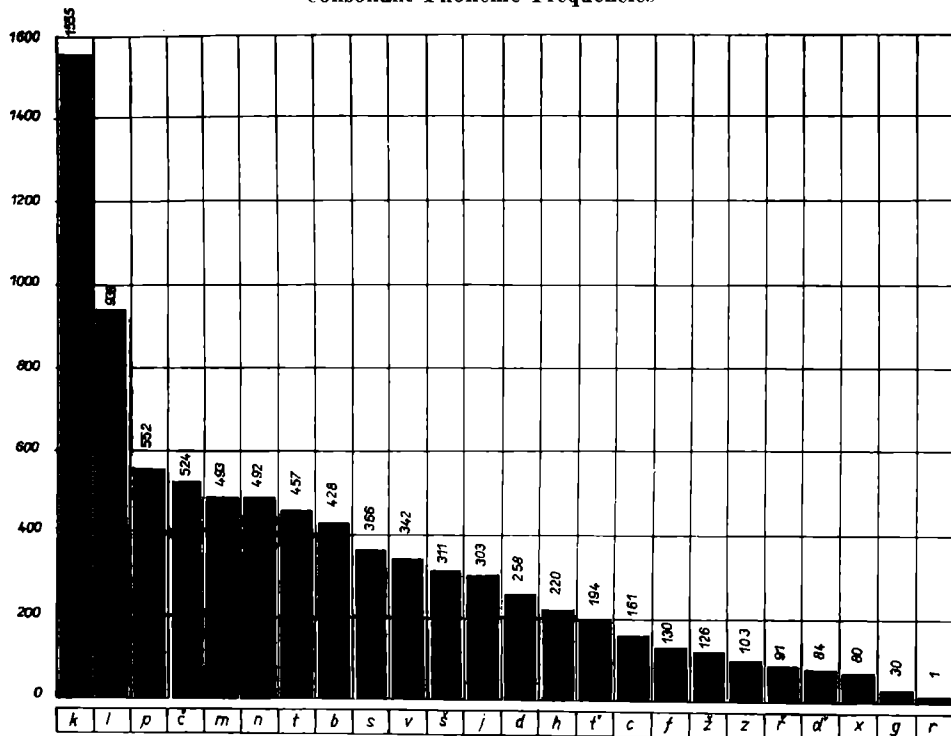


Figure 237

Conclusion

The chapter on consonants realized in the vocabulary of the first five hundred words will be closed in the same way as in the two previous stages, i.e. by a reflection as to which of the features phonemically relevant in Standard Czech are mastered well by the child, which of them show instability and which are missing as yet.

From the six manners of articulation upon which the phonemically relevant distinctions of consonantal phonemes in Czech are based, the child has mastered the following: occlusivity, nasality, fricativity, and laterality. Semi-occlusivity, on the other hand, even in this third developmental stage, is to be ranked as an imperfectly learned feature and no examples which would illustrate the child's attempt to produce the last of the features, i.e. vibrativity, are included in the child's vocabulary¹³⁰. Jakobson's thesis on the late acquisition of those distinctions which are rare in the languages of the world, and the fact that many languages have a single liquid in their consonantal system, should be mentioned in this connection.

Consonant Phonemes
Manner of Articulation

8.3 %	affricates
11.2 %	laterals
13.1 %	nasals
24.0 %	fricatives
43.2 %	stops

Figure 238

Consonant Phonemes
Proportionate Occurrences of
Stops + Others

43.7 %	others
56.3 %	stops

Figure 239

Consonant Phonemes
Oral versus Nasal

13.1 %	nasal
86.9 %	oral

Figure 240

In spite of the fact that the child has mastered all consonantal phonemes except two, the stops exhibit the greatest stability and widest distribution. The frequency order of the consonants which represent the five distinctions in regard to manner of articulation is the following: stops—fricatives—nasals—laterals—affricates. The proportions of their occurrences is given in Figure 238. As is clearly evident from the

¹³⁰ The sole occurrence of the bilabial vibrant does not count here for the reasons given in the paragraph on Vibrant Consonants.

Figures, the occurrences of the stop phonemes account for almost half of the consonant occurrences in the corpus. If we classify nasals with the stops, the predominance of this group compared with other consonants is all the more outstanding (cf. Figure 239). In the light of Jakobson's theory on the development of the phonemic system in the child, neither their predominance nor the above-mentioned greater stability is surprising.

Figure 240 shows the proportion of the nasal and oral consonants. Their mutual relation remains roughly the same as in the previous stages.

Consonant Phonemes
Points of Articulation

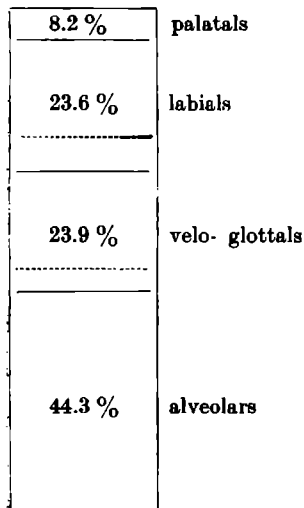


Figure 241

Consonant Phonemes
Front versus Back

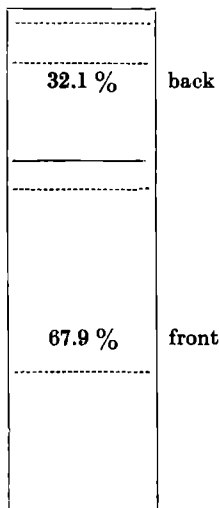


Figure 242

Consonant Phonemes
Voiceless versus Voiced

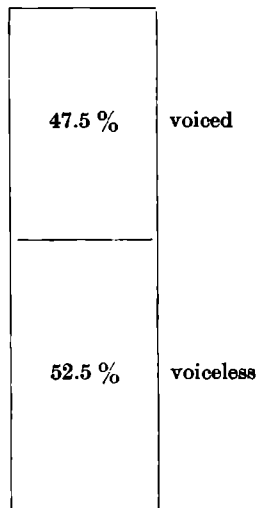


Figure 243

As regards the distinctions based upon the points of articulation, the child has mastered all which have phonemic relevance in Standard Czech, viz. labiality, alveolarity, palatality and velo-glottality. The manner of articulation, then, accounts for a further breakdown into the following spheres; bilabiality and labio-dentality, prae- and post-alveolarity, velarity and laryngeality. The frequency order of the consonants which represent these distinctions is as follows: alveolars—velars—bilabials—palatals—labio-dentals—laryngeals. The proportion of their occurrences is given in Figure 241. Figure 242, then, shows the ratio of the front consonants *versus* the back ones. As in both previous stages, so too in this third, the front consonants predominate over the back both in stability and distribution. The less mature stage of fricatives and affricates shows also in the less well-established point of articulation, in contradistinction to stops and nasals.

The presence or absence of voice is another well-established feature with regard to all consonants found in the vocabulary of the first five hundred words. More frequent, however, are still the voiceless members, especially those of the stops and affricates. The sonants, on the other hand, being voiced but not opposed to any other phoneme

solely by this feature, account for an almost balanced ratio between voiced and voiceless fricatives in total numbers. Figure 243 shows the proportions of the voiced and voiceless consonants. In the predominance of the voiceless consonants, the correspondence between the child's speech and the findings in languages in general is once again illustrated¹³¹. As in the distinctions based on point of articulation, so too in the distinctions based on presence or absence of voice, the stops present a more mature stage of development compared to fricatives and affricates.

Positional Distribution

Consonant Phonemes

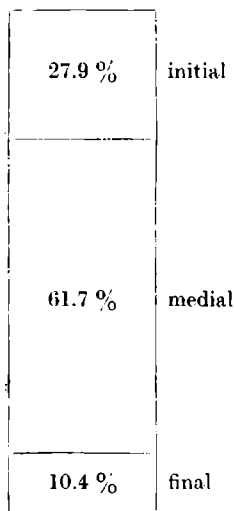


Figure 244

Positional Distribution

Stops

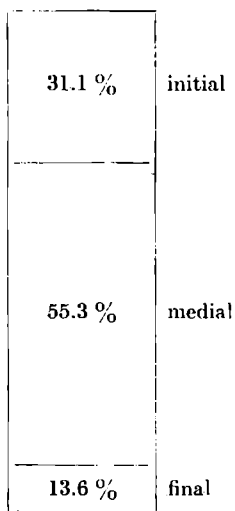


Figure 245

Positional Distribution

Nasals

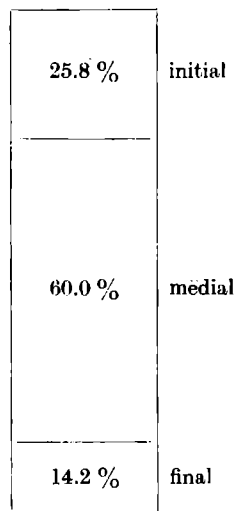


Figure 246

As far as the place of occurrence is concerned, Figure 244 shows the widest distribution of the consonants in the medial position. Compared to previous stages, the percentage here considerably increased. This is undoubtedly due to the stabilization of the consonantal clusters. The 5082 consonant word-medial occurrences in the realizations of the first five hundred words account for 61.7%. The initial position comes next and its 2301 occurrences amount to 27.9%. With 856 occurrences and 10.4% the consonants in the final position rank as the last. A similar picture is revealed if we analyse the stops, nasals, affricates, fricatives and laterals separately. Their occurrences in the initial, medial and final position are shown in Figures 245—249.

¹³¹ Cf. here Trubetzkoy's observation that the unmarked features appear with higher frequency in various languages, e.g. Czech, English, Russian. The few existing deviations are easily explainable on the ground of opposite contextual frequency and lexical productivity, which is due to the shorter history of one member of the pair in the language, e.g. the pair *h/x* in Czech.—For particulars, see N. S. Trubetzkoy, *Grundzüge*, p. 235—236.

Positional Distribution
Affricates

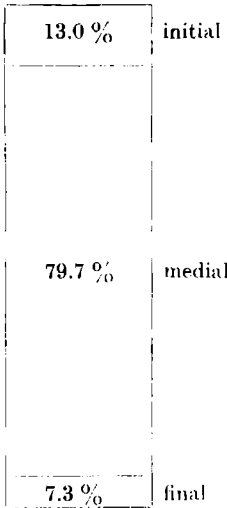


Figure 247

Positional Distribution
Fricatives

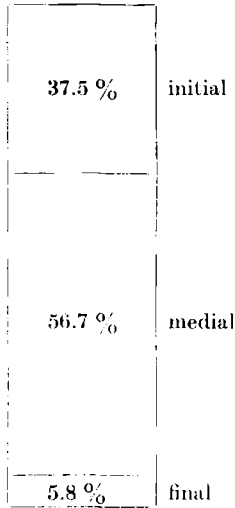


Figure 248

Positional Distribution
The Lateral

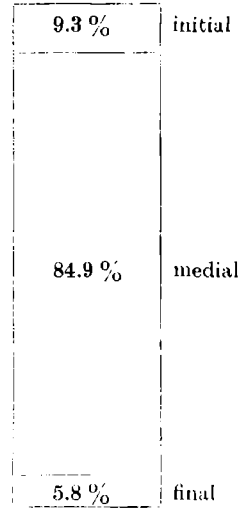


Figure 249

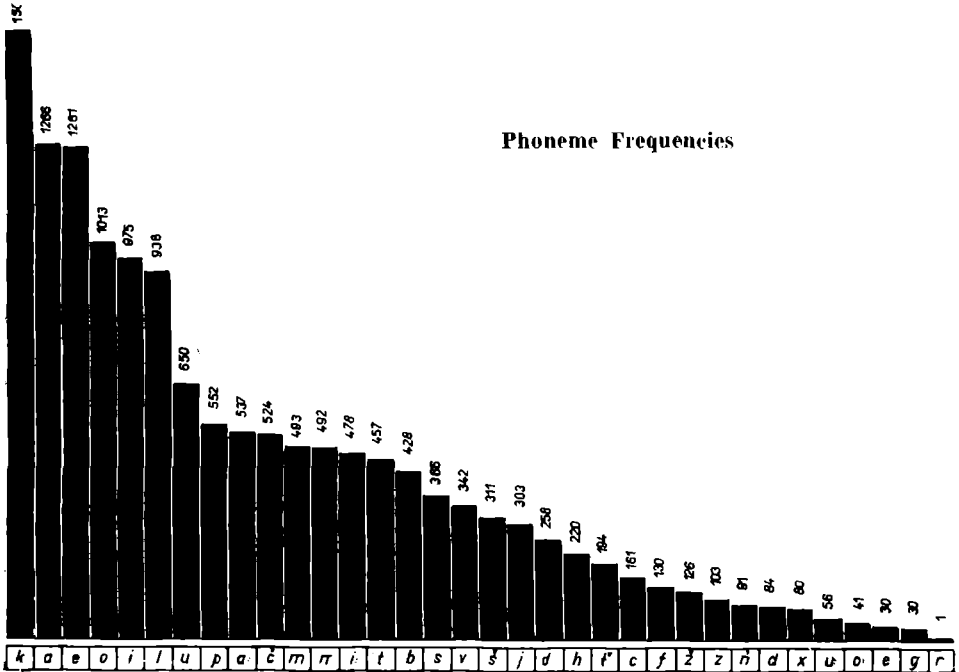


Figure 250

CONSONANTAL CLUSTERS

Since consonantal clusters represent a later linguistic development in the child's speech and since we find clusters (both proper and dyslalic) and cluster simplifications side by side, we must assume that two linguistic strata meet within the period of the first five hundred words; an older one, without consonantal clusters, and a newer one, where consonantal clusters are already realized. Two, three, four and five consonant combinations will be discussed here, according to the position where they occurred in the word.

Initial Clusters

In the realizations of the first five hundred words, 63 combinations which appeared in 338 occurrences were recorded. Of them 51 combinations (315 occurrences) are two-consonant clusters, 9 combinations (18 occurrences) are three-consonant clusters and 3 combinations (5 occurrences) are four-consonant clusters. The majority of the initial clusters are compact, a few, on the other hand, contain a morphematic suture.

Attention will be drawn to the question of which of the consonants mostly combine in this developmental stage.

Two-Consonant clusters

1. a stop + a stop

This combination is comparatively rare and only four data were recorded in the corpus:

<i>gd-</i>	5	e.g. [gdo] <i>kdo</i>
<i>pt-</i>	2	e.g. [pta:ček] <i>ptáček</i>
<i>tm-</i>	1	e.g. [tma] <i>tma</i>
<i>kň-</i>	3	e.g. [kňi:ški] <i>kňížky</i>

All the quoted forms fluctuated with the forms where the cluster has been simplified. In the latter instances the second of the two stops has been, as a rule, preserved, cf. [do] *kdo*, [ta:ček] *ptáček*, [ma] *tma*, [ňi:ška] *knižka*. The forms [ňi:ška] and [ki:ška], however, existed as parallels.

2. a fricative + a fricative

17 data represent this combination. As the examples below illustrate, a fricative mostly combines with a liquid /l/, regardless of whether this /l/ is used properly or as a substitution for /r/. The next most frequent combination is the sequence of a fricative + /v/:

<i>vl-</i>	10	[vla:ček] <i>vláček</i>	<i>hj-</i>	1	[hjački] <i>hračky</i>
<i>sl-</i>	9	[slepička] <i>slepička</i>	<i>fš-</i>	3	[fšixňi] <i>všichni</i>
<i>zl-</i>	3	[zla:mal] <i>zlámal</i>	<i>lv-</i>	1	[lva:k] <i>lev</i>
<i>šl-</i>	4	[šlapu] <i>šlapu</i>	<i>sv-</i>	1	[svetlo] <i>světlo</i>
<i>žl-</i>	2	[žlička] <i>žlička</i>	<i>zv-</i>	4	[zvoňi:] <i>zvoní</i>
<i>xl-</i>	7	[xlapec] <i>chlapec</i>	<i>xv-</i>	1	[xvilička] <i>chvilíčka</i>
<i>hl-</i>	13	[hlaju] <i>hraji</i>	<i>sf-</i>	1	[sfeti:lek] <i>svetýrek</i>
<i>vj-</i>	2	[vja:ski] <i>vrásky</i>	<i>zh-</i>	1	[zhama:m] <i>sním</i>
<i>sj-</i>	1	[sjon] <i>slon</i>			

As with the combination a stop + a stop, so too with the combination a fricative + a fricative, the forms with simplified clusters exist alongside and the first of the fricatives is preserved, cf. [va:ček] *vláček*, [sepiška] *slepička*, [žička] *žlička*, [xapeček]

chlapeček, [va:ski] *vrásky*, [seti:lek] *svetýrek*. The clusters *sv-* and *xv-* fluctuated with [f], cf. [sveti:lko]—[feti:lko], *xvilička*—[filička].

3. a stop + a fricative

This combination is the most widespread in the child's vocabulary and also the frequency of the individual representatives of this group is comparatively high:

<i>pl-</i>	31	[pla:t] <i>prát</i>	<i>tf-</i>	1	[tʃalof] <i>tvaroh</i>
<i>bl-</i>	20	[blambu:lki] <i>brambúrky</i>	<i>kf-</i>	3	[kʃitečka] <i>kvítečka</i>
<i>tl-</i>	14	[tluče] <i>tluče</i>	<i>bj-</i>	7	[bjambu:lki] <i>brambúrky</i>
<i>dl-</i>	2	[dlouhi:] <i>dlouhý</i>	<i>kj-</i>	3	[kji:ček] <i>klíček</i>
<i>kl-</i>	39	[kluk] <i>kluk</i>	<i>ps-</i>	1	[psa:t] <i>psát</i>
<i>gl-</i>	2	[glamofo:n] <i>gramofon</i>	<i>pj-</i>	11	[pšeskoč] <i>přeskoč</i>
<i>ml-</i>	8	[mli:čko] <i>mléčko</i>	<i>tš-</i>	2	[tšešinky] <i>třešinky</i>
<i>tv-</i>	2	[tvalox] <i>tvaroh</i>	<i>kš-</i>	5	[kšidi:lka] <i>křídélka</i>
<i>dv-</i>	3	[dveže] <i>dveře</i>	<i>bž-</i>	3	[bži:ško] <i>bříško</i>
<i>kv-</i>	3	[kvitečko] <i>kvítečko</i>	<i>dž-</i>	4	[dževo] <i>dřevo</i>

As the examples show, all stops combine with /l/ (both proper and substitutional). Fairly often we find the combination of the stops /k/ and /t/ with the fricative /v/, which, however, fluctuate with the clusters *kf-* and *tf-*, cf. [kvitečko]—[kʃitečko], [tvalox]—[tʃalof]. The older developmental stage is seen in such forms where the stop is preserved and the fricative dropped, cf. [bambu:lki]—[bjambu:lki], [douxej] [dlouhej], [mi:čko]—[mli:čko], [bi:ško]—[bži:ško] etc.

4. a fricative + a stop

In this combination 8 data, illustrating the sequence of the sibilant + a stop were recorded:

<i>sp-</i>	12	[spínkat] <i>spinkat</i>	<i>šp-</i>	4	[špinavi:] <i>špinavé</i>
<i>sm-</i>	16	[smeka:m] <i>smrkám</i>	<i>št-</i>	8	[šla:vička] <i>šlávička</i>
<i>st-</i>	17	[stoleček] <i>stoleček</i>	<i>šk-</i>	8	[školka] <i>školka</i>
<i>sk-</i>	7	[skofka] <i>schovávaná</i>	<i>zb-</i>	1	[zbuzenej] <i>vzbuzený</i>

All the existing simplified forms contained the stop while the sibilant was dropped, cf. [pínkat] *spinkat*, [pinavej] *špinavý*, [kolka] *školka*.

5. an affricate + a stop

This combination is registered in a sole example which had three occurrences in the realizations of the first 500 words:

<i>čt-</i>	3	[čtu] <i>čtu</i>
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6. an affricate + a fricative

Like the preceding, this combination too is exceptional and appears but once in the interjection:

<i>cv-</i>	1	[cvak] <i>cvak!</i>
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Three-consonant Clusters

Of this group those combinations are dealt with separately which contain the syllabic allophone of /l/ or /r/ (in our data [l̥] performs the function of both liquids). They are as follows:

<i>m̥lk-</i>	1	[m̥lkef] <i>mrkev</i>	<i>h̥ln-</i>	3	[h̥lneček] <i>hrneček</i>
<i>s̥ln-</i>	3	[s̥lneček] <i>srneček</i>	<i>b̥Rm-</i>	1	[b̥Rm] <i>brm!</i>
<i>kl̥č-</i>	1	[kl̥ček] <i>krček</i>			

All of them are compact. Alongside this group there are three-member clusters without syllabic consonant, both compact and with morphematic suture:

svj-	1	[svjet̩i:lko] svět̩ylko	stl-	2	[stlomeček] stroměček
sp-	4	[splavi:m] spravim	fst-	2	[fsta:vat] vstávat

As the examples illustrate, these combinations consist of two fricatives + one stop and the sequence of three fricatives in one instance. In simplifying, one of the two fricatives is dropped, cf. [sveti:lko] svět̩ylko, [stomeček] stroměček, [sta:vat] vstávat.

Four- consonant Clusters

This category contains only such combinations of which either the second or the third consonant functions as a syllable bearer:

plst-	3	[p s̩li:čkama] prstičkami
k čk-	1	[k čku] krčku
šk t-	1	[šk ti:] škrti

All of them are compact, and consist of two stops and two fricatives.

In regard to frequency, the two-member clusters highly predominate over the three- and four-member clusters. As for the proportion of the various types of consonants which have combined among themselves, the fricatives with 84 occurrences come first (25 of them are liquids, of these 5 syllabic). Following in order of frequency are the stops, which have 54 occurrences (of them 7 being nasals). The affricates represent the least group having only four occurrences. Figure 251 shows the proportion of the two, three and four member clusters. In Figure 252 the proportions of the types of consonants are indicated.

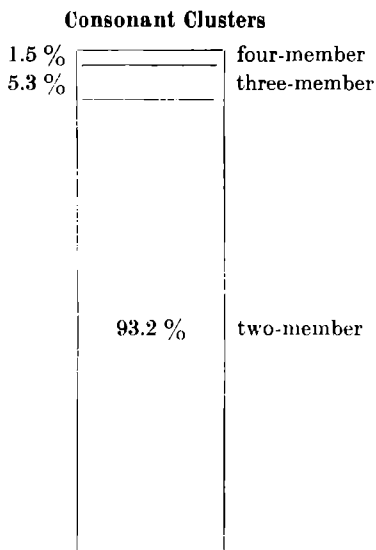


Figure 251

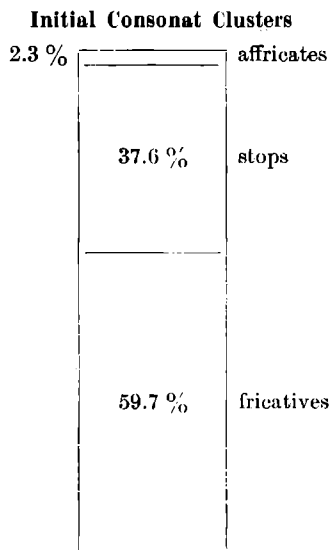


Figure 252

Medial Clusters

Word-medially, 110 consonantal clusters were recorded in the total of 1040 occurrences. Of them the two-member sequences amount to 100 combinations (1015 occurrences), the three-member sequences to 7 combinations (21 occurrences), the four-member sequences to 2 combinations (3 occurrences) and five-member sequence to 1 combination (1 occurrence). Most of these medial clusters are divided by morphematic suture, the compact clusters, however, do exist as well.

Two-consonant Clusters

1. a stop + a stop

There are 22 consonant clusters of this type. Most frequently used are those where a stop combines with a nasal, as the following examples with their frequencies illustrate:

-pk-	12	[žapka] žabka	-dm-	1	[sedmeme] sedneme
-tk-	44	[kuža:tko] kuřátko	-pn-	6	[lozepnout] rozepnout
-lk-	3	[tafka] tafka	-dn-	8	[sedneme] sedneme
-yk-	81	[maminka] maminka	-kn-	15	[fiknem] fikneme
-ňk-	3	[kuziňka] kuchyňka	-mn-	1	[kamna] kamna
-kt-	2	[taktol] traktor	-př-	2	[lozepři] rozepři
-ňl-	6	[puňlí:ček] Puntíček	-bň-	2	[tabeňšca] stavebnice
-kl-	3	[tiklak] tiktak	-ďň-	1	[seďňi] sedňi
-mb-	25	[hamba] hanba	-kň-	2	[ka:kňi] vyskoč
-gb-	2	[bagbak] babbak	-mň-	2	[zamňouka:va:m]
					mňoukám
-ňď-	1	[buňďička] bundička	-nd-	9	[bunda] bunda

The simplification of these clusters is very rare. If it appears, the second of the consonants is dropped, cf. [seďi] sedňi. Dissimilation accounts for the realization of the proper cluster -kt- as -xt-, cf. [taxtol—taktol] traktor and -dm- instead of -dn- [sedmeme] sedneme.

2. a fricative + a fricative

We have 16 combinations of this type; Most of them have /l/ as one of the component:

-fl-	4	[knořli:ček] knořtíček	-zv-	2	[lozvi:me] rozsvítím
-sl-	15	[ma:řli:čko] mášličko	-jv-	1	[přiklejva:me]
					přikrýváme
-zl-	2	[nezlobit] nezlobit	-lh-	1	[kalhotki] kalhotky
-řl-	3	[pořlapu] pošlapu	-vh-	3	[havhavřaf]
					hařhařhaf
-jl-	3	[bejle] brýle	-wh-	1	[hawhaf] hafhaf
-xl-	2	[řixle] rychle	-vj-	1	[řlavřenka] travřenka
-hl-	5	[hohlí:k] rohlik	-xj-	1	[přixja] přichla
-lv-	3	[kalvi:l] klavír	-vž-	8	[vavři] zavři

The majority of the above-cited examples represent clusters which are correct and have their correlates in Standard Czech. Some of them, however, require comment. Thus the clusters -jl- and -jv- are due to the child's adoption of the colloquial forms *brejle* nad *přikrýváme* instead of standard *brýle*, *přikrýváme*. Metathesis, on the other hand, accounts for the rise of the cluster -lv-, cf. [kalvi:l] klavír. The cluster -vž- replaces the proper -vř- and similarly, in -xj- instead of -xl- and -wh- instead of -vh-, the older developmental stage is reflected, cf. [přixja] přichla, [hawhaf] hafhaf, [vavři] zavři. In those examples where simplification was registered the second of the two fricatives was dropped, cf. [kof:ček] knořtíček, [ma:řli:čko] mášličko.

3. a stop + a fricative

This type is represented by 13 combinations. Of them the most frequently used are those where the fricative is the liquid /l/:

-pl-	5	[viplali] vyprali	-nv-	1	[konvička] konvička
-bl-	33	[doblou] dobrou	-kv-	2	[mekvičku] mrkvičku
-tl-	9	[pittle] pytle	-bj-	2	[obja:ski] obrázky
-dl-	26	[hadlu] hadru	-gž-	2	[tigži:k] tygřík
-kl-	18	[pšiklejt] přikrýt	-kš-	4	[zakšič] zakřič
-gl-	1	[fotoglafovat] fotografovat	-ps-	2	[kapsička] kapsička
-dv-	1	[medvi:dek] medvídek			

In simplification, the stop remains as simple consonant; [oba:zek] obrázek, [gafovat] fotografovat, [konička] konvička. Both the variants, however, appear in the item *medvídek*, cf. [medi:dek] and [mevi:dek]. Ignorance of the vibrants accounts for the cluster -gž- and -kš-, cf. [tigži:k] tygřík, [zakšič] zakřič.

4. a fricative + a stop

This combination is the most frequent, both in types and in occurrences. There are 35 various types, while none of them is simplified in this developmental stage:

-fk-	6	[luka:fk] rukávky	-jd-	6	[jejda] jejda
-sk-	30	[pšeskoč] pšeskoč	-zd-	1	[nazdal] nazdar
-šk-	111	[flaški] flašky	-sm-	1	[višmeka:me] vysmrkáme
-lk-	69	[svjeti:lko] světylko	-vn-	1	[da:vnu] dám
-jk-	2	[ahojka] ahoj!	-fn-	3	[bafnu] vybafnu
-št-	2	[moxu:ltuta] muchomůrka	-sn-	1	[zapi:snu] zapiši
-st-	18	[čista:] čistá	-zn-	1	[voli:znu] olíznu
-št-	9	[tušta] tužka	-žň-	2	[zva:žnu] zvážím
-zt-	1	[taxtol] traktor	-ln-	5	[uđelnu] udělám
-st-	16	[pustim] pustím	-jn-	3	[mlějnek] mlýnek
-št-	14	[flaštička] flaštička	-hn-	3	[utahnul] utrhl
-jt-	2	[tejli:k] čertík	-fň-	1	[bafňi] bafni!
-xť-	5	[nexti:k] nehtík	-vň-	1	[splavňi] sprav!
-lt-	3	[čelti:k] čertík	-šň-	6	[ukousňi] ukousni!
-vb-	2	[bavbaf] ba/baf	-žň-	3	[češňe] třešně
-wb-	1	[bawbaf] ba/baf	-xň-	2	[fšixňi] všichni
-zb-	6	[lozbili] rozbili	-sp-	4	[kapsička] kapsička
-ld-	3	[felda] Ferda			

The clusters -vn-, -žň-, -ln- require comment as they have no correlate in Standard or Colloquial Czech. They are due to the child's own formation of the verbal aspect, cf. [da:vnu] dám, [zapi:snu] zapiši, [zva:žnu] zvážím, [uđelnu] udělám.

5. an affricate + a stop

Only five types of such cluster are found in our data. Of them, however, the cluster -čk- appearing in the diminutive forms has by far the highest frequency:

-ck-	11	[pečki] pečky	-cn-	3	[ba:cnu] nabacám
-čk-	236	[babička] babička	-čn-	3	[nočňi:ček] nočníček
-zd-	2	[duzduc] ducduc			

Only the cluster -čň- fluctuates with a simple consonant, cf. [nočňi:ček]—[noli:-ček]—[noši:ček]—[noči:ček]. The cluster -cn- is to be explained on the same ground as the above mentioned -vn-, -sn-, -žň-, -ln-, i.e. it is due to the incorrect formation of the verbal aspect, cf. [ba:cnu] instead of the correct [nabaca:m].

6. a stop + an affricate

This combination is comparatively rare only and three data were found in the realizations of the first 500 words:

-pc-	2	[kapcička] kapsička	-nč-	2	[olinčín] Olinčín
-nc-	7	[cancuje] tancuje			

The cluster -nč- fluctuates with -njč-, cf. [olinčín]—[olinjin]—[olinjkovo] Olinčín. The assimilation of manner of articulation might account for the rise of the cluster -pc-, cf. [kapca], [kapcička], kapsa, kapsička. The influence of Colloquial Czech pronunciation is another possible explanation.

7. a fricative + an affricate

This is another of the rare types of clusters and we have but five instances:

-lc-	3	[posti:lc] postýlce	-lč-	3	[olčička] holčička
-sc-	1	[nescu] nechci	-jč-	3	[zajček] zajíček
-fč-	1	[kafčo] kafičko			

Having no correlates in standard language, the clusters -sc-, -fč- and -jč- require comment; -sc- replaces the proper -xc-, cf. [nescu] nechci. The colloquial form [nescu] served, in all probability, as the child's model for imitation. The cluster -fč-, on the other hand, is the result of the incorrect formation of the diminutive form, cf. [kafe:]—[kafčo] kafe, kafičko. A syncope accounts for the third exceptional cluster -jč-, cf. [zajček] with the correct [zaji:ček].

8. an affricate + a fricative

Only one occurrence of such a cluster is found in our data, viz.

-cl-	1	[ba:clo] spadlo
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As the example illustrates, the cluster appears in a verbal form which was derived from the interjection *bác* and has thus no correlate in standard language.

Three-consonant clusters

As in the initial three-consonant clusters, so too in the medial ones, the clusters containing the syllabic peak will be dealt with separately. There is a sole occurrence of this type and the syllabic [l] replaces here the syllabic [ɾ].

-l̩m-	2	[kotl̩melec] kotrmelec
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The remaining three-consonant clusters, whether compact or divisible by morphemic suture, have no syllabic peak and are shown in the following examples:

-nsk-	10	[mi:nski:] mlýnský	-ngl-	3	[lingla] ryngle
-mbn-	1	[vibumbnu] vybumbám	-ňdň-	1	[suňďňi] suňďej
-lbl-	2	[velblout] velbloud	-nkn-	2	[ci:nknu] zazvoním

As far as the structure of the three-consonant clusters is concerned, the following combinations appear in the realizations of the first 500 words; the sequence of three plosives (of which two are sonants); the combination of two plosives (of which one is a sonant) + a fricative; the combination of one plosive + two fricatives (both of them are liquids). Only the sequences -nsk-, -lbl- and -ngl- have their correlates in the speech of adults. The remaining three combinations have arisen in instances representing the boy's incorrect formation of the verbal aspect.

Four-consonant Clusters

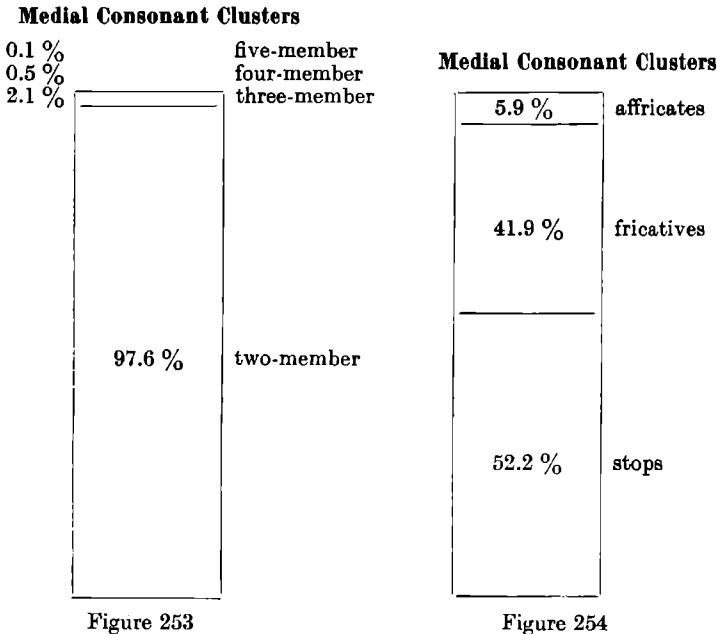
As in the initial, so too in the medial clusters in this category only such combinations appear which contain the syllabic allophone [ʎ], which, however, in all instances represents the proper syllabic [r]:

-smʎk-	2	[vismʎka:me] <i>vysmrkáme</i>
-stʎh-	1	[lostʎhat] <i>roztrhat</i>

The first of the two combinations is compact and consists of two plosives (of which one is a sonant) + two fricatives (of which one is a syllabic liquid). The other combination is divisible with a morphematic suture and one plosive combines here with three fricatives (of which one is a syllabic liquid).

Five-consonant Clusters

A sole example to represent this combination is found in the child's vocabulary, viz. -smʎkn- ([vismʎknu] *vysmrkám*). This combination, consisting of three plosives (of which two are sonants) and two fricatives (of which one is a syllabic liquid), has no correlate in Standard Czech and is to be explained on the basis of the child's experimenting in expressing the grammatical categories.



In regard to frequency, a similar picture to that in the case of initial clusters is revealed in the medial ones: the two-member clusters exhibit striking predominance while the distribution of the three-, four- and five-consonant clusters is minimal. Figure 253 shows the proportion of the clusters.

As for the proportions of the various types of consonants which meet in combination in the medial position, the frequency counts are as follows: of the total number of 234 consonants there are 122 plosives (of which the nasals account for 49 occurrences), 98 fricatives (of which the liquids account for 30 occurrences, four being syllabic) and 14 affricates. Figure 254 indicates the proportion of consonantal types. In distinction to the initial clusters, the most widely distributed consonants in the medial ones are the plosives, while the fricatives come as the next most frequent group. The affricates remain in the minority.

Final Clusters

Word-finally, 13 consonantal clusters were recorded in the total of 22 occurrences. All the combinations are the two-member clusters and, except for *-pl*, all are compact. Like the initial and medial clusters, the final clusters containing the syllabic allophone of /r/ or /l/ will be dealt with separately. As in other instances, so here too, the syllabic [ʎ] performs the function of both these liquids:

-pʎ	2	[lozɛpʎ] <i>rozepʎ</i>	-kʎ	1	[cukʎ] <i>cukr</i>
-dʎ	2	[hadʎ] <i>hadr</i>	-gʎ	1	[tigʎ] <i>tygr</i>

The remaining final clusters do not contain the syllabic peak and appear in the following combinations:

-nt	3	[bažant] <i>bažant</i>	-jk	1	[mlazejk] <i>mrazík</i>
-ɲk	8	[cílilɲk] <i>cílilɲk</i>	-sk	1	[kosk] <i>koks</i>
-st	4	[nepust] <i>nepust</i>	-ks	1	[koks] <i>koks</i>
-lt	2	[čelt] <i>čert</i>	-jl	1	[olejʎ] <i>olej</i>
-tj	2	[pšiklejʎ] <i>pšikrýt</i>			

Two of the quoted examples represent the sequence of two plosives, viz. *-nt* and *-nk*. Both of them are correct and have their correlates in the speech of adults. The sequence of a fricative + a plosive, on the other hand, requires comment. Only the combination *-st* appears in Standard pronunciation. The combinations *-jt* and *-jk* have their origin in the colloquial forms, cf. *pšikrejt*, *mrazejk* instead of the standard *pšikrýt*, *mrazík*. The remaining two sequences reflect the as yet unfinished learning process. While in the combination *-lt* the liquid /l/ replaces the vibrant /r/, illustrating thus the absence of the feature of vibrativity in the child, the operation of metathesis explains the sequence *-sk*, cf. [kosk] instead of [koks]. The sole example representing the combination a plosive + a fricative is the sequence *-ks* and appears in the item [koks], illustrating the more advanced stage of the above-mentioned form [kosk]. The attempt at hypercorrect pronunciation might be an explanation for the rise of the combination a fricative + a fricative in the item [olejʎ] *olej*. We have mentioned before that fluctuation between /l/ and /j/ was fairly common in the child's idiolect in the early stages of his linguistic development. The example *olej* is an interesting manifestation of this fluctuation. Ignorance of which of the two fricatives is correct explains not only their mutual fluctuation, cf. [olel]—[olejʎ] but also the omitting of the final consonant, cf. [ole:] or the above-mentioned rise of the consonantal cluster, cf. [olejʎ].

Final clusters which would represent the combinations with more than two members were not recorded in the realizations of the first five hundred words. As regards the proportion of the various types of consonants which combine word-finally, the plosives with their 14 occurrences rank as first. Of them, two are nasals. The fric-

atives with their 12 occurrences (6 of them are liquids) come as second. No affricates appear in combination in the final position. Figure 256 shows the proportion of the plosives and fricatives.

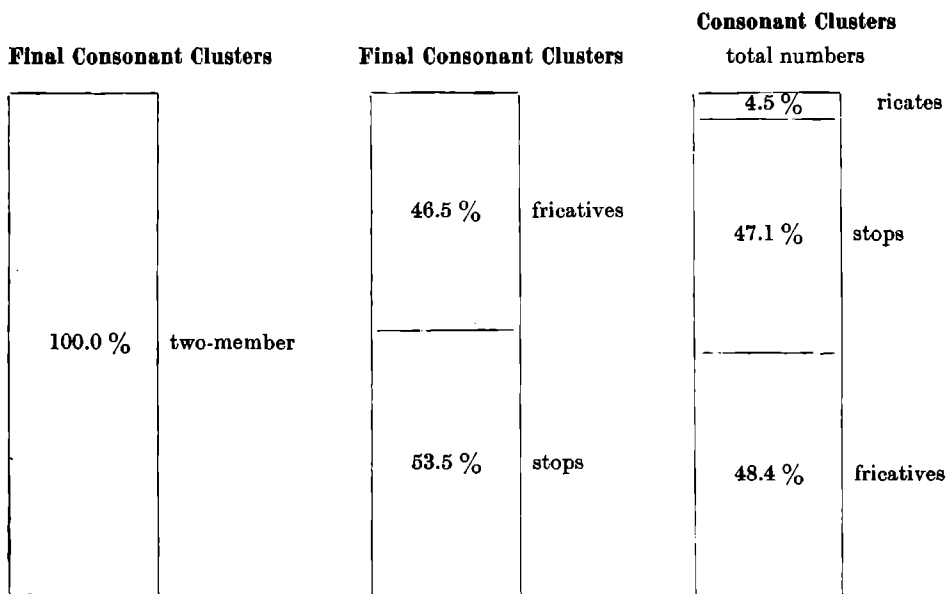


Figure 255

Figure 256

Figure 257

After classifying the various combinations in the initial, medial and final clusters we shall summarize our findings and compare with the findings of other investigators in this field:

Of the total number of 401 consonants which meet in combination in the first-five-hundred-word period there are 189 stops (of which 58 are nasals), 194 fricatives (of which 61 are liquids, while 12 among these are syllabic allophones) and 18 affricates. Figure 257 shows the proportions of the types of consonants. The predominance of the fricatives¹³², however slight, might confirm the opinion that the fricative articulation has been mastered by the child in this period and that the fricatives have become the equivalent partners to stops, regardless of the fact whether they occur separately or in consonantal clusters. This is an important progress in the speech development. In distinction to both previous stages, which can be aptly called the stages of simplified consonantal clusters¹³³, the child does realize the majority of consonantal clusters in this third developmental stage. As the first-fifty- and first-one-hundred-word periods were characterized by the stability of the stop phonemes,

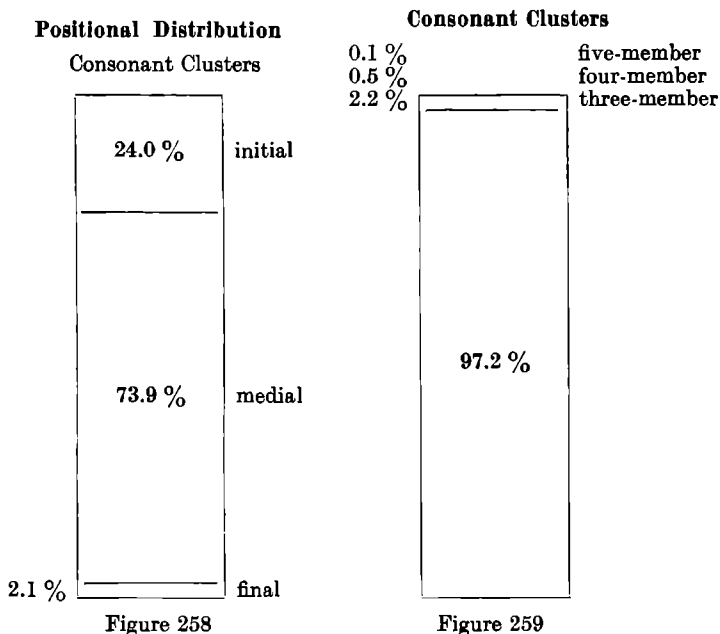
¹³² L. Bartoš, *Observations*, p. 14, has the following proportions of the consonantal types in clusters: stops 41.7 %, fricatives 29.9 %, liquids and /ʃ/ 21.1 % and affricates 7.3 %. When treating the fricatives and the liquids under the same heading, his order of frequency is identical with ours; fricatives—stops—affricates.

¹³³ Cf. A Grégoire, *L'apprentissage*, p. 252.

it is only natural that in simplifying the consonantal clusters the stops have been preserved while the fricatives have been dropped¹³⁴.

As regards the question of the position in which the consonantal clusters appear at first, our findings confirm once again those arrived at earlier¹³⁵; the consonantal clusters become stabilized first in the medial position especially in connection with morphematic suture. Their stabilization in the final position comes as second while in the initial position the clusters appear and stabilize last.

A rather different picture is revealed when dealing with the question of frequency of the consonantal clusters in the three positions. The results of an analysis of the first five hundred words clearly illustrate the high predominance of the cluster occurrences word-medially, while the word-initial position comes second. The word-final position is represented by the smallest incidence¹³⁶. Figure 258 shows the proportions of the clusters in the three positions.



As regards the proportion among two-, three-, four- and five-member clusters, the two-consonant clusters strikingly predominate. The multi-consonant clusters have minimal occurrence in the child's vocabulary, as Figure 259 indicates.

¹³⁴ The thesis of the preservation of the stop in the sequence of a stop + a fricative or *vice versa*, was already pronounced by Jespersen, as far as the initial consonantal clusters are concerned, cf. his *Language . . .* p. 107. — The examples of K. Ohnesorg in *Fonet. studie I*, p. 42 and *Fonet. studie II*, p. 50 show that the same principle holds good even in the medial clusters. Similar findings are given by S. Phanhauser, *Rozvoj*, p. 294, Gvozdev, *Usvojenie*, p. 46 and most recently by R. Weir, in *Language in the Crib*, p. 63.

¹³⁵ Cf. Ohnesorg, *Fonet. studie I*, p. 42; A. Grégoire, *L'apprentissage*, p. 252.

¹³⁶ V. Mathesius in *La structure phonologique* speaks of the dislike of Czech for grouping the consonants at the end of syllables.

SOUNDS IN COMBINATIONS

As in most children, in the idiolect of the child investigated a number of phonetic changes also appear in operation. The principle of maximum economy in articulation, which is shown in languages in general, and is therefore even more actual in the speech of the child, who is striving for coordinated movements of the speech organs, is the common denominator of all these changes. Among them, certain kinds of assimilation are the most frequent.

Sound Assimilation

In the earliest stages, distant sound assimilation appears with high frequency. The assimilating process here consists in equalizing the consonants in the word. Of the two types of assimilations, i.e. the progressive and regressive, the former appeared sooner in the child observed as compared to the latter type. A few examples illustrating the operation of progressive assimilation are the following; [koki:kek] *knořtíček*, [kaka:lek] *kočárek*, [gaga:fon] *gramofon*, [kuki:ne] *kuchyně*, [kařkan] *kařtan*, [teletek] *štěteček*. Nevertheless, regressive sound assimilation appears as well, cf. [hlala] *žízala*, [fefefec] *jezevec*, [fefefon] *telefon*, [žežeček] *ježeček*, [jaji:čko] *vajičko*, [kařka] *tařka*, [pa:p] *čáp*, [hohl:ik] *rohlik*, [tabebňica] *stavebnice*, [bobelec] *koberec*, [klořli:k] *knořlik*, [kledli:ki] *knedlíky*, [papesňi:ček] *kapesniček*, [bobouk] *klobouk*, [boblej] *dobrý*, [kokoja:da] *čokoláda*, [vavži:t] *zavřít*, [kakapa:me] *nakapáme* etc. The ignoring or lesser stability of the consonants which are replaced here should be, however, mentioned too in this connection.

A similar assimilating process affects the vowels too; cf. [kvitički] *kvítečka*, [ďitički] *dělátka*, [ži:bički] *hříbečky*, [očički] *očička*, [uřički] *ouřka*, [mu:u:ltuta] *muchomůrka*, [dulu:] *dolů*, [dukuju] *děkuji*, [avat] *chovat*, [aka:dat] *vykládat*, [klacan] *krocán* etc. Though in many of the quoted examples analogy no doubt played its role, we cannot but compare this phenomenon with the law of so-called vocalic harmony which operates in some languages, e.g. Hungarian and Turkish, or, in regard to vowel quality, in French.

Assimilation of Voice

With the appearance of consonantal clusters, all the kinds of assimilations typical for Czech occur in the child. In accordance with standard usage, the regressive type of assimilation is adopted as a rule, while the progressive type is restricted to a few items, which nevertheless, have their correlates in standard or dialect pronunciation. The following are some examples of the regressive voice assimilation; [gdo] *kdo*, [gdepak] *kdepak*, [luka:fki] *rukávky*, [lostuhnout] *roztrhnout*, [bagbagbak] *bakbakbak*, [havhaf] *hafhaf*. The last two items are illustrations of the sandhi assimilation where the voiced paired initial consonant caused the sonorization of the final voiceless consonant of the preceding word. In this connection, a sole example of the so-called Moravianism where the sonant /l/ behaves as a paired voiced consonant in exerting its influence on the preceding consonant, which due to the neutralization of the feature of voice in the final position should be a voiceless one, cf. [had leze] instead of the correct [hat leze], was recorded.

In accordance with Standard Czech, the operation of the progressive voice assimilation concerns the vibrant /ř/ and is evident in the child even in that period when the trilled articulation has not been mastered as yet and /ř/ is for that reason re-

placed by substitutive sounds. In all instances the substitute is either [š], where the proper /ř/ is preceded by the voiceless paired consonant, cf. [pšeskoč] *přeskoč*, [tšešinky] *třešinky*, [kšidi:lka] *křidélka* or the voiced [ž], where /ř/ is preceded by the voiced paired consonant, cf. [bži:ško] *bříško*, [dževo] *dřevo*, [tygži:ček] *tygříček*¹³⁷.

Another example where the progressive assimilation operates in Standard Czech is the combination of the fricative *s* + *h*. The orthoepic norm admits here both the pronunciation [zh], which is current above all in Moravia, and the pronunciation [sx], which has its origin in the local variant of Prague Czech. Prague, however, being the capital, necessarily exerts an influence which accounts for the spreading of the [sx] pronunciation all over the Czech-speaking territory. In the speech of the child observed, the cluster -*sh*- appears in a sole item, viz. *na shledanou*. In its realization, however, this three-member cluster has been simplified and realized in the form [nasledanou], which might be found in Colloquial pronunciation in the speech of adults as well.

Last but not least, the operation of progressive voice assimilation is shown in the combining of the voiceless paired consonant + *v*, cf. [kfi:tek] *kvítek*, [kfitečko] *kvítečko*, [tfalož] *tvaroh*, [sfeti:lek] *svetýrek*, [sfili:] *svítí*, [xfilička] *chvilíčka*. Similar data might be found in some Moravian dialects.

The neutralization of the feature of voice, which is considered a certain type of voice assimilation, was used by the child consistently and correctly in accordance with the Standard pronunciation, cf. [la:t]—[ra:t] *rád*, [veblout]—[velblout] *velbloud*, [lef] *lev*, [ma:s]—[mra:s] *mráz* etc.

Assimilation of the Point of Articulation

The operation of this kind of assimilation is best shown in the data containing the velar allophone of the phoneme /n/, which—as was noticed in other place—appears in the child simultaneously with the stabilization of the velar consonants /k/ and /g/, cf. the fluctuation between [n] and [ŋ] in the instances like [maminta]—[maminka], [cilint]—[cilinka]. In those items which have entered into vocabulary after the stabilization of /k/ and /g/, only the correct forms with the velar allophone exist, cf. [maminenka], [panenka], [olinka], [kolin:zka], [linzla], [linzlička].

The assimilating process concerning the point of articulation affects, however, other consonants as well, cf. [žabaňti] *bažanti*, [buňdička] *bundička*, [suňďňi] *sundej*.

Assimilation of Manner

Though considerably less frequent, even this kind of assimilation does appear in the child and a few instances were recorded in the realizations of the first five hundred words, cf. [nek to] *nech to*, [kapcička] *kapsička*, [do kapcički] *do kapsičky*.

The principle of economy in articulation which accounts for the assimilating process might be also seen in that phenomenon which consists in simplifying two identical or similar consonants. The manifestation of such a phenomenon appears above all in children and in Colloquial Czech pronunciation. Not exceptional are, however, data where simplification affects even the orthoepic pronunciation, cf. e.g. [pana] *panna*, [raňi:] *ranni*, [rosvi:tít] *rozsvítit*. In our material, these examples show the above-mentioned simplification; [kapsice] *v kapsičce*, [babice] *babičce*, [slněci] *srněčci*, [ta:ček] *ptáček*, [zoňi:] *zvoní*, [konička] *konvička*, [pasa:to] *prasátko*, [melisme] *měli jsme* etc. Besides these, there are also instances where one of the two non-identical and

¹³⁷ For a more detailed description of the behaviour of the phoneme /ř/ cf. pp. 178—180.

non-similar consonants were dropped, e.g. [košika] *košilka*, [žička] *lžička*, [pošta:š] *pošťaš*. The simplification of consonantal clusters, typical in all children in the early developmental stages, is reflected in this phenomenon. Sometimes, the simplified and non-simplified forms exist parallel to each other: [feti:lko]—[sfeti:lko] *světylko*, [filička]—[xfilička] *chvilička*, [feti:lek]—[sfeti:lek] *svetyrek* etc.

Haplogy

Rather interesting are those data where one of the two identical or similar syllables disappears in the assimilating process. Besides occurring in child speech, such a haplogy might be found in the historical development of languages¹³⁸. In our data the following instances were recorded; [duju] *děkuji*, [etika] *elektrika*, [daba:k] *darebák*, [uda:lo] *udělalo*, [naslonov] *na shledanov*.

To conclude the paragraph on assimilation, we shall review which of the two types, i.e. progressive and regressive, is more frequent in the child and which of them appears earlier.

As regards proportion, the regressive assimilation is far more frequent. Our numerical data in this respect closely correspond to those of the Sterns¹³⁹, cf. the ratio 78 : 22 in German- and French-speaking children with our 80.9 : 19.1.

As regards the factor of time, however, the progressive assimilation represents the older developmental stage, while the regressive is—in our findings—later in appearance in the child investigated.

Dissimilation

Like the assimilating process, the dissimilating process too might be accounted for on the basis of the principle of economy in articulation. This phenomenon too appears in the historical development of languages and in Colloquial pronunciation, especially in interpretation of foreign words in the speech of adults, and is therefore not surprising in children. The operation of dissimilation which concerns either the place or manner of articulation is demonstrated in our data by the following examples: [este] *ještě*, [skovat] *schovat*, [taxtol] *traktor*, [doxtolka] *doktorka*. As a result of the dissimilating process might be considered after all even such examples as [babiška] *babička*, [slepiška] *slepička*, [koleško] *kolečko*, though the origin is no doubt to be found in the later mastering of the affricates as compared to the fricatives.

A certain type of distant dissimilation is the phenomenon where one of the consonants is replaced by another one or is dropped for the reason that the identical consonant appears twice in one word cf. [baja:n] *banán*, [budeli:k] *dudlík*. Nor is this phenomenon typical solely for the child investigated. Ohnesorg has similar observations in his findings, cf. [holem] *honem*, [modoglam] *monogram*, [pote] *popel*¹⁴⁰, and data demonstrating such a dissimilation could be found in the historical development of languages¹⁴¹.

¹³⁸ Cf. at least the well-known examples such as Latin *matulinum* with French *matin*, *Sequana* with *Seine*, or Old English *Englaland* with Modern English *England*.

¹³⁹ Cf. C. u. W. Stern, *Kindersprache*, p. 342.

¹⁴⁰ Cf. Ohnesorg, *Fonet. studie I*, p. 48.

¹⁴¹ Cf. *Kyšperk* with the German *Geiersberg*, *singular*—*plural* with the Latin *singulis*—*pluribus*. Well-known are such examples as *purpurový* when compared with the English *purple* (cf. Latin *purpureus*) or English *pilgrim* with French *pelerin* (cf. Latin *peregrinus*).

Metathesis

Metathesis of two consonants or syllables is another phonetic change, dissimilating in essence, which is frequent in children, especially when reproducing those longer words which enter newly into their vocabulary. Examples showing the operation of this phonetic change in English-speaking children may be found in Jespersen¹⁴², who in this connection aptly mentions the difficulties of adults when facing the reproduction of long and foreign words which they hear for the first time and which do not belong to the fundamental word-stock. The liquids are then the consonants which are affected most often, cf. *levorver*—*revolver*, *konoláda*—*kolonáda*, *cerel*—*celer* etc.¹⁴³. In our data, metathesis is illustrated in the following examples; [e:po:la:n] *aeroplán*, [talka:žek] *trakáček*, [poma:lalo] *polámalo*, [umobilo] *ulomilo*, [kolomotiva] *lokomotiva*, [filajovi:] *fialový*, [kalvi:l] *klavír*, [vilepeme] *vypereme*, [kaspíčka] *kapsička*, [pikšo:tek] *piškotek*, [kosk] *koks*, [žabant] *bažant*, [vli, vli:čata] *lvi*, *lvičata*, [žlička] *lžička*.¹⁴⁴

The Emergence of New Sounds

Contrary to those changes where one of the consonants or vowels is dropped, there are also such changes in the child's idiolect where a new consonant or vowel appears as additional to those existing in the given word. These are, however, not identical with the commonly known svarabhakti consonants which emerge in languages in order to enable an easier transition between two consonants (cf. e.g. *Kundratice*—*Kunratice*, *kastrolek*—*casserol*, *hastrman*—*Wassermann*, Old English *Ūymel*, *Ūymles*—Mod. English *thimble* etc).

Analogy, on the other hand, to a sound occurring in the same or related word accounts—in all probability—for the rise of the new consonant in the child. The following are some examples for illustration; [packi packi packički] *paci paci pacičky*, [midli:lko] *mydlýlko* [hladtu] *hadru*, [koblelec] *koberec*, [blablenec] *mravenec*, [kapka:tko] *kapátko*, [kapkički] *kapičky* etc.

In the newly appearing vowels, however, the situation seems to be different. Though even here many a formation is due to analogy (cf. e.g. sg. [kla:li:ček] with pl. [kla:li:čeki] *králíček*, *králíčci* or [osel] with the diminutive form [oseli:ček] *osel*, *oslíček*), the vowels have, in our opinion, the svarabhakti character and are inserted in order to liquidate the difficult consonant cluster, cf. [okono] *okno*, [tama] *tma*, [pesa] *psa*, [pi:sat] *psát*, [peta:ček] *ptáček*, [hleneček] *hrneček*, [kamena] *kamna*, [zebelovat] *sebrat*, [mokava:] *mokrá*.

In the next paragraph, we shall devote attention to the question of how the child deals with **The Combination of the two Vowels**.

¹⁴² See Jespersen, *Language*, p. 108.

¹⁴³ The evidence that metathesis played an important role in the historical development of Czech and in languages in general is seen in the fact that in Modern Czech most of the consonantal clusters appear in the beginning of the syllable in distinction to older developmental stages and to Germanic languages, where the developing process went the opposite way, cf. Old Slavonic *vorna* with Modern Czech *vrána*, Old English *brīd* with Modern English *bird* etc.

¹⁴⁴ Ohnesorg, *Fonet*, *studie* II, pp. 55—56, has a similar observation. Here are his examples; [kofojat] *fotografovat*, [kondezdovani:] *kondenzované*, [omoloti:va] *kolomotiva*. Besides, he has an interesting finding in connection with the consonantal clusters *př*, *tř*, *kř*, which are realized as *sp*, *st*, *št* in the period when the child has not yet mastered the trilled articulation, cf. [sti:da] *křída*, [spelest] *přelést*, [nepašti:] *nepašti*.

It should be pointed out at the outset that the chain of two vowels, whether diphthongal or hiatic, seems to be a difficult phenomenon for the child in his first developmental stages and is therefore—like the consonantal clusters—simplified. In distinction to consonants there are more ways of simplification in vowels. In diphthongs, the process either results in monophthongization, while the second component of the genuine diphthong is dropped; or else the diphthong is substituted for by a long vowel, i.e. the lengthening of the first component takes place; or, as commonly occurred especially in the very first developmental stage, the diphthong is realized as a hiatus and each of the components is given an articulatory impulse while the pause is inserted in between. It might be taken for granted, however, that in the realization of the first five hundred words the child has mastered the articulation of the diphthongs, though even here we can find them being replaced by a long vowel. In dealing with hiatus situation, nevertheless, his method reveals deviations as compared with Standard usage, which appear above all in incorrect inserting of the hiatic consonants. A few data follow to demonstrate this phenomenon; in accordance with Colloquial Czech, the boy uses the hiatic [v] in sandhi situation, cf. [*do voka*] *do oka*, [*ve voči:x*] *v očích*, [*do vokna*] *do okna*. The same consonant is, however, inserted in between the prefix and stem, i.e. in the position where the hiatus, however common in Czech¹⁴⁵, is not liquidated or else a glottal stop is realized, cf. [*nevuduži:m*] *nevdržím*, [*nevuhođi:m*] *neuhodím*. Furthermore, [v] appears in loan-words, cf. [*kakavo*], [*kakavo:čko*] *kakao*, where, however, this consonant alternates with [j], cf. [*kakajo*]. In connection with this expression another liquidation of hiatus occurs in the child, namely syneresis, where the former hiatic chain [ao] gives way to a diphthong [au], cf. [*kakau*]. This phonetic change, though documented in the historical development of Czech, cf. *do-úfati*—*doufat*, *za-jitra*—*zítra*, is unknown in Modern Czech¹⁴⁶.

The child's aversion to hiatus combinations is evident in many examples which were recorded in his speech long after his linguistic development was accomplished. Here are a few data, illustrating the liquidation in loan-words; [*vi:kuka*] *vjúka*, [*feduda:l*] *feudál*, [*terorije*] *teorie*, [*šfat*] *Fiat*, [*piruleta*] *pirueta*, [*pneumatika*] *pneumatika*, [*revmatismus*] *reumatismus*.

Combination of a Consonant + a Vowel or *vice versa*

In such sequences no phonetic changes occur in Czech and, with minor exceptions, they do not appear in the child investigated. As an example of the exceptional occurrence, the aspiration observed in the first-fifty-word period in the combination of a voiceless stop + a vowel ([*p^ha:p^ha:*] *pápá*, [*p^hi:p^hi*] *pipí*) should be recalled here. This phonetic phenomenon has, however, not become a firm component of the phonemic system in the child; on the contrary, it disappeared already within the first developmental stage.

Abbreviation of Words

In most findings on the child's language the shortening of longer words is noticed and considered as one of the characteristic features in the language development. While some of the investigators simply document its appearance in children, others try to explain it by trying to establish certain laws in children's behaviour in this respect. The majority agree in one point, namely, that in shortening the end of

¹⁴⁵ Cf. V. Mathesius, *Několik slov o hiátu*, p. 219 ff.

¹⁴⁶ It appears, however, in Modern English, cf. [*duə*]—[*duə*], [*si:ə*]—[*siə*].

the words is preserved. This led Jespersen¹⁴⁷ to classify those abbreviations where the first syllable is dropped as children's formations, while those which preserve the first syllable and drop some of the remaining ones he regards as the result of adult interference in the language structure. Less agreement is, however, found in explaining the children's behaviour. Let us mention here a few of the suggestions concerning this problem: in Grégoire's opinion¹⁴⁸ the child preserves the stressed (i.e. in French the last) syllable and drops the preceding ones. In the influence of stress on the shortening of words in children Gvozdev¹⁴⁹, Krasnogorskiy¹⁵⁰ and Smoczyński¹⁵¹ also believe, the last of them presenting many examples of speech developments of Polish-, Russian-, German- and Bulgarian-speaking children. In view of the fact that the first syllable is stressed in Czech and yet it is dropped in Czech-speaking children, the above-mentioned opinion is not applicable here. This, undoubtedly, led Ohnesorg¹⁵² to pronounce the following theses: in the early developmental stages the abbreviating of words is a mere echo and the child repeats that syllable which incorporated the greatest intensity, either melodic or dynamical. Later on, the child concentrates on those syllables which are most important for understanding, i.e. the stem and the suffix of the word. The acceptance of Ohnesorg's opinion would help to account for the late appearance of prepositions in children. If, on the other hand, stress were to be the relevant factor in the abbreviating operation, the syllabic prepositions, being stressed in Czech, should have been early in appearance and, as for shortening, they should have been preserved, which is certainly not the case.

In our material, the thesis of the preservation of the end of word in the child in abbreviating is confirmed; the following examples are given as illustration; [*bus*, *busek*] *autobus*, *autobusek*, [*kuj*] *děkuji*, [*ji:ka*] *polívka*, [*veška*] *ovečka*, [*ka:dat*] *vykládat*, [*beška*] *koloběžka*, [*koja:da*] *čokoláda*, [*fonovat*] *telefonovat*, [*mofo:n*] *gramofon*, [*ma:ška*] *omáčka*, [*gafovat*] *fotografovat*, [*galeti*] *cigarety*, [*pesňi:ček*] *kapesníček*, [*ňi:ško*] *sluníčko*, [*velka*] *veverka* etc.

As in the findings of Ohnesorg, Janko, Phanhauser, Kaczmarek, Smoczyński and Cohen, so too in our corpus such examples can be found where—in shortening—only the initial consonant is dropped, cf. [*iška*] *liška*, [*kovat*] *skovat*, [*ovat*, *avat*] *chovat*, [*apesňi:ček*] *kapesníček*, [*apak*] *kdepak*, [*aka:dat*] *vykládat*, [*iba*] *ryba*, [*ališki*] *šatičky*, [*akukala*] *zakukala*, [*ičisti:me*] *vyčistíme* etc. Though usually treated under the same heading, these examples, in our opinion, are not proper manifestations of what we understand by abbreviated words, as the number of syllables remains unchanged here and various factors might account for the loss of the initial consonant. The omission of the as yet imperfectly learned consonant, its absence in the child's consonantal system, or the simplification of the difficult consonantal cluster are perhaps plausible explanations. The treatment of such forms as intermediate grades which have appeared in the gradual mastering of the correct in-abbreviated form is, however, not excluded, cf. [*ka:dat*]—[*akat*]—[*vikla:dat*] *vykládat*, [*ovat*]—[*kovat*]—[*skovat*] *schovat*.

For definite conclusions, a more thoroughly detailed analysis in regard to the abbreviating process in children, both Czech and non-Czech, would be needed. The

¹⁴⁷ Cf. O. Jespersen, *Language*, p. 7.

¹⁴⁸ Cf. A. Grégoire, *L'apprentissage*, p. 264.

¹⁴⁹ Cf. Gvozdev, *Usvoenie* p. 113.

¹⁵⁰ See Krasnogorskiy *Stanovlenie detskoy rechi* in Chukovskiy, *Ot dvuzh do pyati*, p. 70.

¹⁵¹ Cf. Smoczyński, *Przyswajanie*, pp. 197—205.

¹⁵² Cf. Ohnesorg, *Fonet. studie* II, p. 65, *Mluvní vývoj*, p. 37.

results of such an analysis as well as the comparison of the various methods would no doubt help in determining the leading factor.

PHONEMIC SHAPES OF WORDS

In terms of their length, the child's vocabulary of this period consists of the following types of words; monosyllabic, disyllabic, trisyllabic, tetrasyllabic, pentasyllabic and hexasyllabic.

Phonemic Length of Words

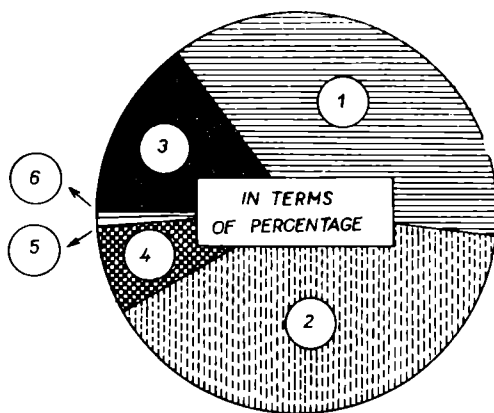
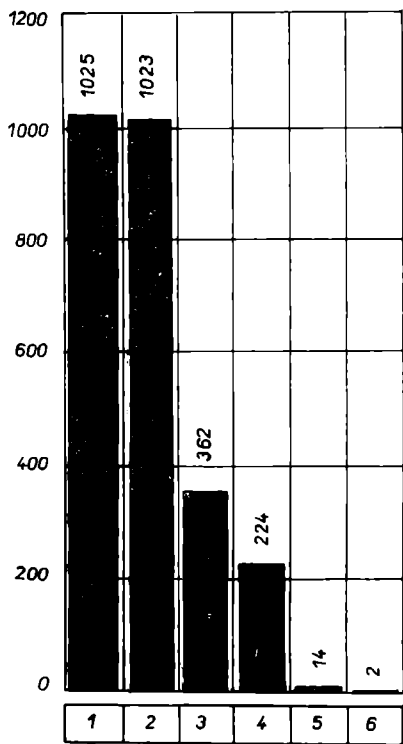


Figure 260

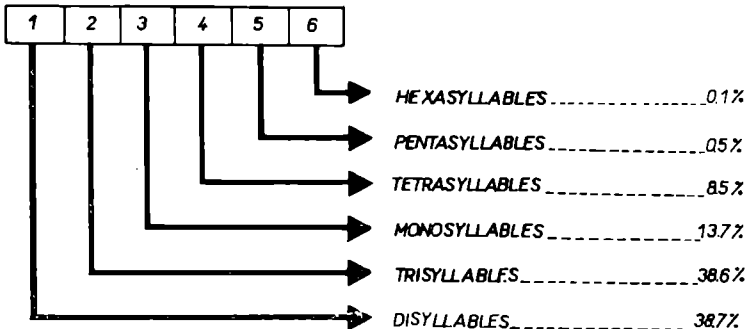


Figure 261

In order of syllabic length, the disyllables remain most widely distributed; they are, however, closely followed by trisyllables. The distribution of monosyllables is, on the other hand, considerably lower and so is that of tetrasyllables. The penta- and hexasyllabic words appear least frequently. Though they have a minimum occurrence, their existence in the child's vocabulary is surprising and requires comment; in most instances, they represent various realizations of loan-words, cf. [*kolomoti:va*], [*kolomota:va*] [*lokomoti:va*] *lokomotiva*; [*fotoglafovat*] *fotografovat*, [*telefonovat*] *telefonovat*; of the others, let us mention here examples as [*malilíneškí:*] *malíčký* and [*velíkana:nskej*] *veliký*. Their syllabic length is due to the inserting of emotional infixes in order to express the highest possible contrast between little *versus* big. The last group of pentasyllables (and of hexasyllables as well), in which the boy derives verbal forms from substantives by introducing prefixes and suffixes, thus naturally enlarging their syllabic length, is to be accounted for as the result of the child's formation, cf. [*vopapučkovat*], (to put on slippers), [*vinočňi:čkova:va:m se*] (I am using the pot), [*vočepičkujeme*] (we are going to put on our cap). Such words have no equivalents in Standard Czech. Figures 260 and 261 show the occurrence of words in their order of frequency as well as their mutual proportions.

As in the two previous vocabularies, here too we have analysed the first five hundred words in regard to their consonant and vowel sequences.

Phonemic Shapes in Monosyllabic Words

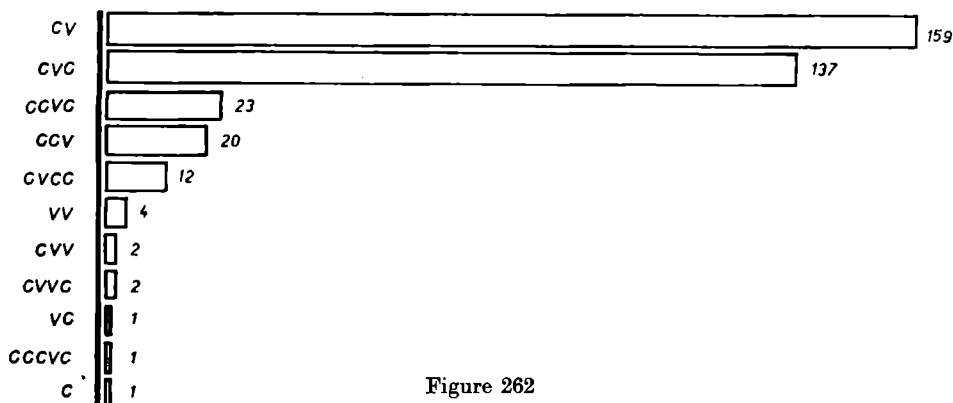


Figure 262

In monosyllables there are 11 different shapes and their structure and frequencies are shown in Figure 262. As is evident, the CV shape is the most frequent and is followed by the CVC shape. The remaining shapes have progressively decreasing occurrences.

As for the onsets, the shapes beginning with a consonant greatly predominate, while vocalic onset is almost exceptional. Of the two shapes which do begin with a vowel, the former VV was recorded in the interjection [*au, auvej*], the other represents the as yet imperfect child's formation where the proper initial consonant was dropped, cf. [*ol*] *loď*. The exceptional position of shapes beginning with a vowel is shown also in the number of occurrences. While the syllabic shapes beginning with a consonant in onset have 357 total occurrences, the syllabic shapes beginning with a vowel have only 5 total occurrences.

With regard to syllables, the open syllables slightly predominate compared to the closed. Figure 263 shows the ratio.

In disyllables, 44 phonemic shapes were recorded and their structure and frequencies are shown in Figure 264. As in monosyllables, so too in disyllables the sequence CV is the optimal one. Most of the words are those of CVCV shape. The following are those of CVCCV shape. The following are CVCVC-shaped words. In the comparison of our findings with those reported by J. Vachek¹⁵³, a considerable resemblance

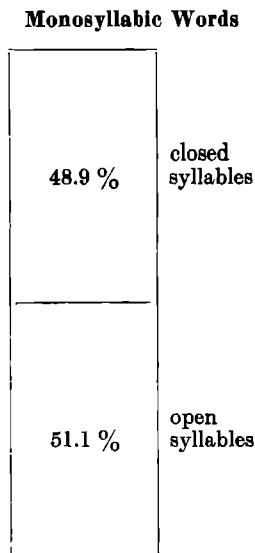


Figure 263

might be seen. In his countings the shape CVCVC is the most widely distributed (it is the second most frequently used in our findings) and is followed by CVCCV (which is the third most frequently used in our corpus); CCVCV is the next most frequent shape in Vachek and comes fifth in our order of frequency. If we take into consideration that in J. Vachek only the five-phoneme words were analysed regardless of their syllabic length¹⁵⁴, the resemblance of the most widely distributed types in Standard Czech and in the child's vocabulary is the higher.

Of the next shapes which have fair distribution in our data the shapes CVCCVC and CCVCCV, which come fourth and fifth in the scale of frequency, should be mentioned here. The remainder have minimal occurrences and their frequency order might be seen in Figure 264.

The comparison of the number of the shapes beginning with a consonant (i.e. 35) with that of the shapes beginning with a vowel (i.e. 9) once again confirms the dislike of Czech to distributing vowels word-initially. The number of occurrences, too, offers further support for this observation, cf. 298 occurrences of the CVCV shape as the most frequent representative of those

beginning with a consonant, with 30 occurrences of the shape VCV, which is the most frequent one of those beginning with a vowel. It must be kept in mind that in the latter shape the loan-words, which have different phonemic structure, and the as yet imperfect forms where the proper initial consonant was dropped and which therefore have no equivalents in Standard Czech, are also included.

As in monosyllables, so too in disyllables the open syllables predominate compared to the closed ones. Figure 265 indicates the ratio.

In trisyllables, there are 59 phonemic shapes, of which 14 begin with a vowel; their structure and frequencies are indicated in Figure 266. The shape CVCVCCV is the most widely distributed. The CVCVCV and CVCVCVC shapes follow. The shape CVCCVCCV comes fourth and the shape CCVCVCCV fifth in order of frequency.

As in monosyllables and disyllables, so too in trisyllables, the words with consonantal onset exhibit conspicuous preponderance both in the number of various

¹⁵³ Cf. J. Vachek, *Fonologie lexika*, p. 397. He, however, uses the pattern babab, babba and bbaba where we have CVCVC, CVCCV and CCVCV.

¹⁵⁴ J. Vachek here continues in the research which was initiated by V. Mathesius, see *La structure phonologique*, pp. 67–84, where the author analyses the phonemic structure of words consisting of one, two, three and four phonemes.

Phonemic Shapes in Disyllabic Words

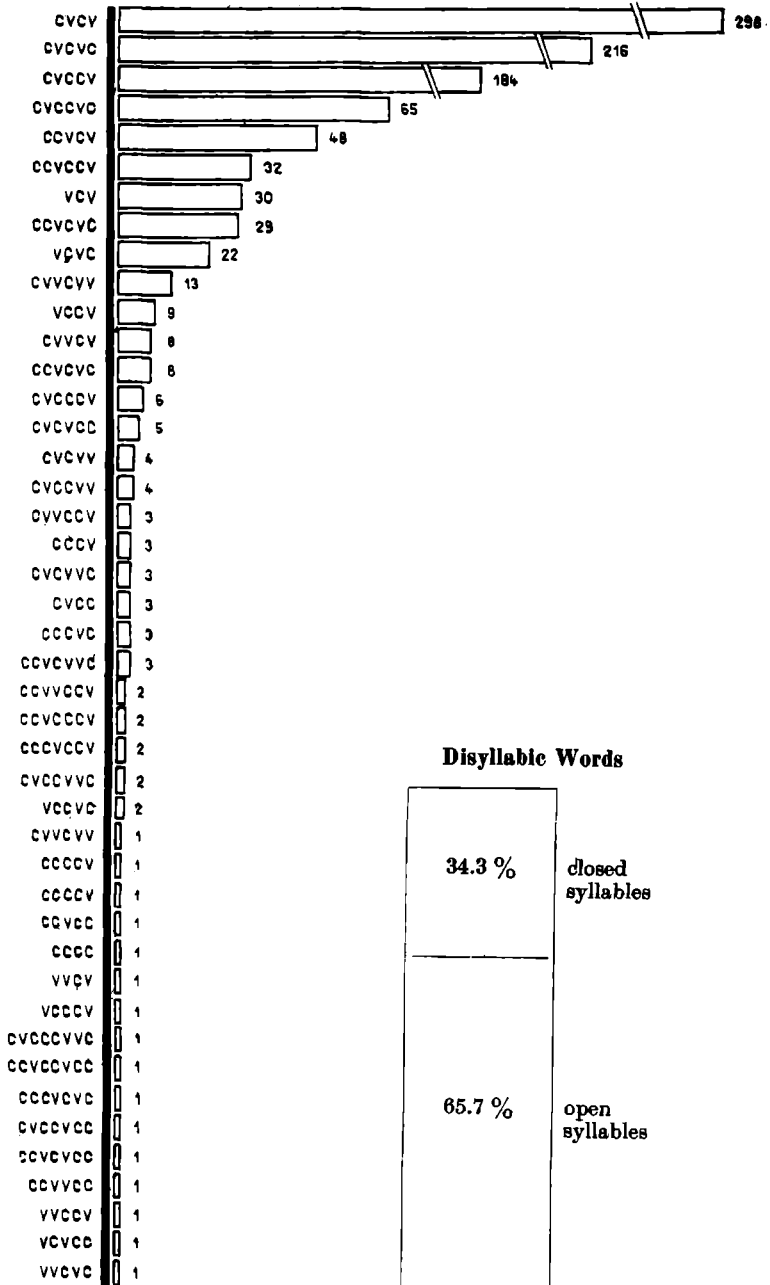
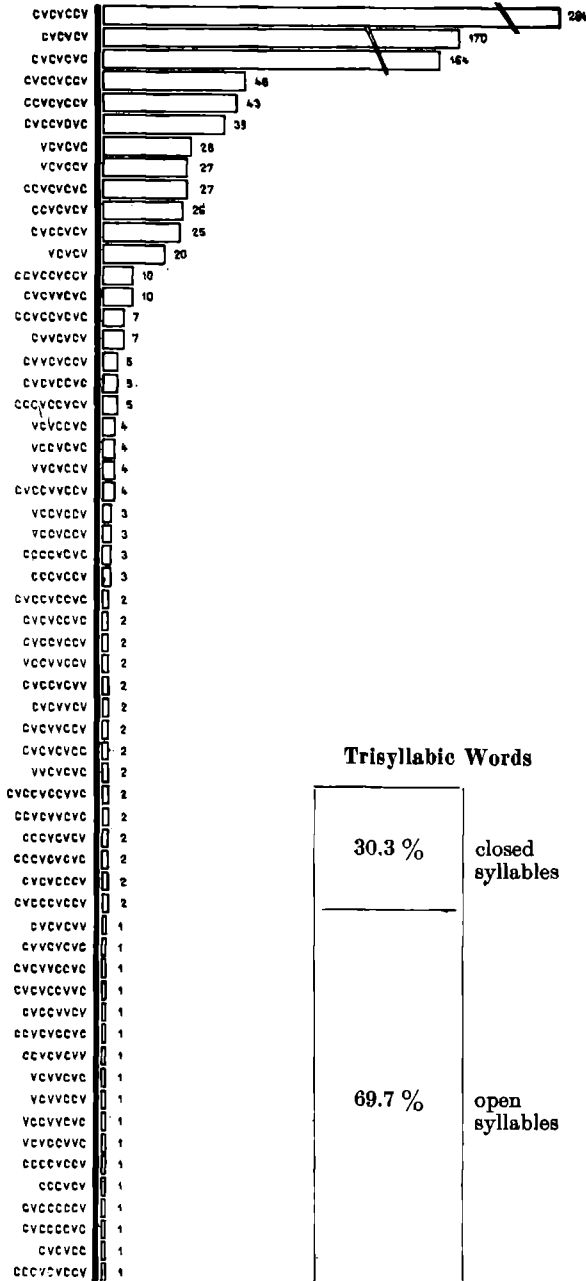


Figure 264

Figure 265

Phonemic Shapes in Trisyllable Words



Trisyllable Words

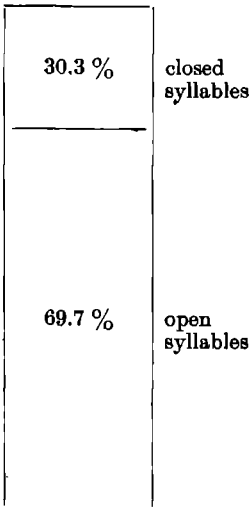


Figure 266

Figure 267

Phonemic Shapes in Tetrasyllabic Words

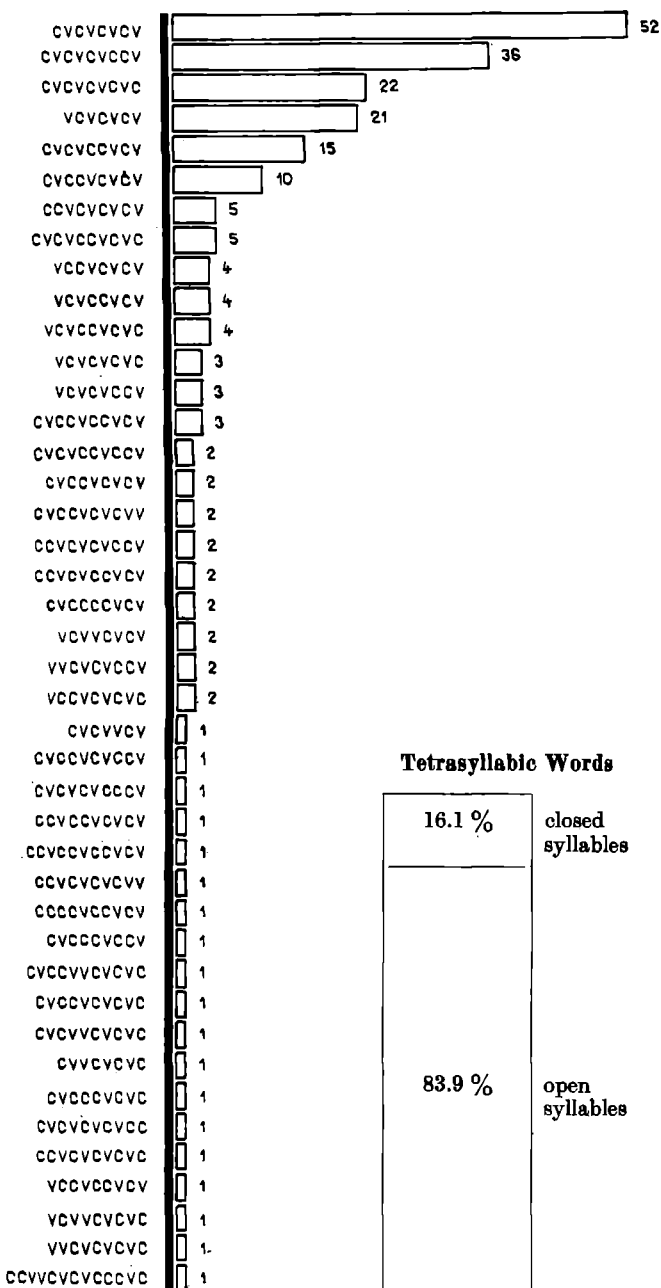


Figure 268

Tetrasyllabic Words

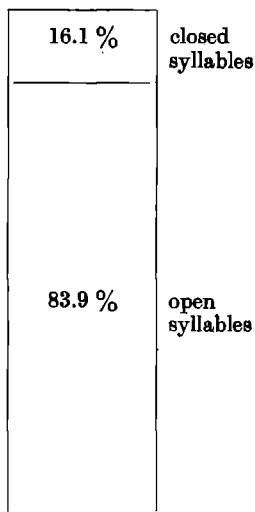


Figure 269

shapes and the number of occurrences. To demonstrate this, we can compare the 284 occurrences of CVCVCCV (as the most widely distributed shape beginning with a consonant) with 28 occurrences of VCVCVC (as the most widely distributed shape beginning with a vowel). As reported for mono- and disyllables, the open syllables predominate also in trisyllables and their mutual ratio is shown in Figure 267.

In tetrasyllables, the total of 42 phonemic shapes, of which 12 begin with a vowel, appeared. Their structure and frequencies may be seen in Figure 268. The high predominance of the CV shape is again more than evident. The CVCVCCV shape here is most widely distributed, the CVCVCCCV shape comes second and the CVCVCCVC shape third in the frequency scale. There follow the VCVCVCV and VCVCVCVCV shapes, which occupy the fourth and fifth place respectively. In view of what has been said about the general aversion of Czech to employing vowels word-initially, the fourth place of the VCVCVCV shape in the frequency order is rather surprising. The comparatively frequent occurrence of expressions such as [uti:ka:me] *utíkáme*, [uti:la:me] *utíráme*, [oba:ti:me] *obrátime*, [ukidi:me] *uklidíme*, together with the as yet imperfect realizations of some of the others, cf. [i:peleme] *vypereíme*, [i:čisti:me] *vyčistíme*, is a plausible explanation. Also the fact that tetrasyllables as a whole are not so frequently distributed as the shorter words, contributes to the more balanced proportions in the different shapes.

Phonemic Shapes in Pentasyllabic Words

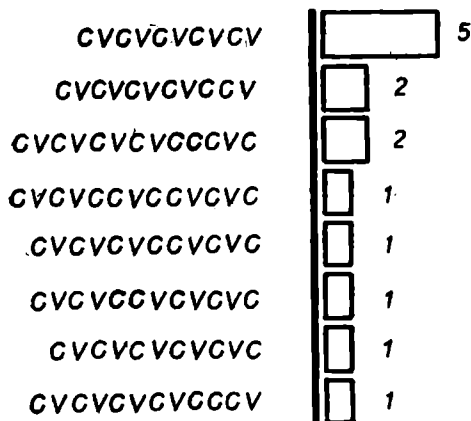


Figure 270

Pentasyllabic Words

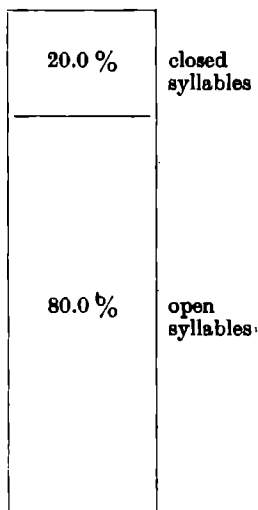


Figure 271

The preponderance of the open syllables, observed in all words so far analysed, reached here the highest percentage, amounting to 83.9% of the total of syllables, cf. Figure 269.

In pentasyllables, 8 different shapes occurred, all of them with a consonant onset. For their structure and frequencies see Figure 270. In spite of the fact that all pentasyllables are either loan-words or typical baby words, their phonemic structure closely corresponds to that reported as the optimal in other situations. Thus the

shape CVCVCVCVCV, i.e. the repeated sequence of the CV shape, is the most widely distributed, while the second and third places are occupied by the CVCVCVCCV and CVCVCVCCVC shapes respectively. Concomitantly, the high preponderance of the open syllables over the closed is to be expected. Figure 271 gives the ratio of the two types of syllables.

The hexasyllables are represented by two shapes, as Figure 272 indicates. As concerns their structure, what has been said of pentasyllables holds good for hexasyllables, too. In spite of the fact that both the words are representations of the child's *ad hoc* formations, their structure follows the general tendency observed in other words, i.e. the repetition of the CV shape combined, to a lesser degree, with that of CVC. Under such circumstances, the open syllables naturally again prevail over the closed. Figure 273 indicates their ratio.

Phonemic Shapes in Hexasyllable Words

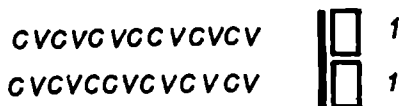


Figure 272

Hexasyllable Words

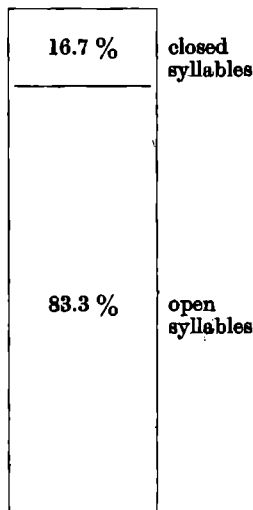


Figure 273

To summarize, we show the ratio of the open and closed syllables in the first fifty, first one hundred and first five hundred words:

92.8 : 7.2 80.6 19.4 69.5 : 30.5

As the figures indicate, the closed syllables remain in a striking minority in all the three stages, in spite of the fact that their number of occurrences progressively increases.