

Certain characteristics of speech behaviour of children between the age of three and five

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The effects physical health on speech behaviour were observed in 40 children (20 boys and 20 girls) at the age between three and five. Up to the age of four, subjects were tested each three month, and every six month. Because of absence due to illness, subjects at the age of 3;3, 3;6 and 3;9, could not be consistently tested according to the determined program.

Language development of children was monitored by a battery of tests composed by S. Vasic.

Physical health was monitored by determining the state of health at birth (hospital discharge certificate), anthropometric measurements: body mass and length at birth and body mass and height at the moment of testing; by monitoring psychomotor development; by monitoring illnesses.

The education level of mothers was also taken in account.

Developmental phenomena were observed by the method of longitudinal observation and method of cross-section analysis.

The statistical methods were applied: the mean value and the standard deviation, the test of significant differences and multiple correlation analysis.

RESULTS OF INVESTIGATION OF LANGUAGE DEVELOPMENT OF CHILDREN

– Articulation Test –

Results of testing showed that the boys at the age of 3;0 articulate 38,5% of speech sounds, 4,7 of which incorrectly. At the age of 5;0 they articulate 81% of sounds, 2% of which incorrectly. Girls at the age of 3;0 articulate 43.4% of speech sounds, 5.7% of which incorrectly. At the age of 5;0 they articulate 74.3% of speech sound, 2.5% of which incorrectly.

Types of errors in spontaneous articulation of speech sounds are omission, substitution and distortion. Among the boys at the age of 3;0, 6.8% of speech sounds were omitted, 59.1% substituted, and 34.1% distorted. At the age of 5;0, 48.6% of speech sounds were substituted, and 51.3% distorted. Among the girls at the age of 3;0, 6% of speech sounds were omitted, 61.6% substituted and 32.3% distorted. At the age of 5;0, 41.8% of speech sounds were substituted and 58.1% were distorted.

In the group of children of both sexes at the age of 3;0 and 5;0, the same type of errors appear, and they differ only by quantitative participation.

Based on t-test, it can be seen that in development of articulation, no statistically significant difference exists between boys and girls at the age of 3;0, while at the age of 5;0, the difference amounts to $t=2.10$ and $p<0.05$ in favour of the boys.

The process of speech sound formation and their articulation is not completed at the age of 5;0, both among boys and girls.

– Vocabulary Test –

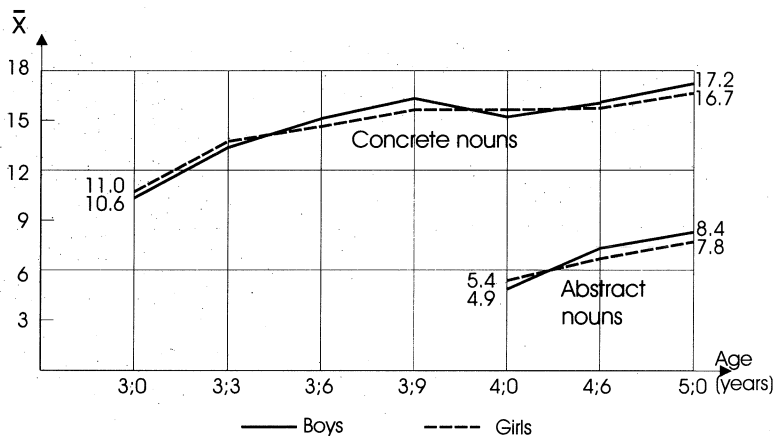
Results of the t-test show that among subjects of both sexes, a statistically significant difference appears observed longitudinally and even in short time intervals (but not in all the observed time intervals), and a much greater difference in long time intervals – for the vocabulary test in general.

The boys 3;0/3;3, $t=2.20$, $p<0.05$. 3;3/3;6, $t=1.90$, $p<0.10$. 3;3/3;9, $t=4.90$, $p<0.0001$. 4;0/4;6, $t=2.58$, $p<0.05$. 4;0/5;0, $t=5.60$, $p<0.0001$. The girls: 3;0/3;3, $t=3.10$, $p<0.01$. 3;3/3;9, $t=5.19$, $p<0.0001$. 4;6/5;0, $t=2.10$, $p<0.05$. 4;0/5;0, $t=3.10$, $p<0.01$.

Among the boys, in acquisition of the capability to adopt meaning of abstract nouns, statistically significant differences appeared between the age of 4;0 and 4;6 ($t=6.30$, $p<0.0001$), and between the age of 4;6 and 5;0 ($t=5.19$, $p<0.01$). Among the girls between the age of 4;6 and 5;0 ($t=1.76$, $p<0.10$).

The mean values obtained by the vocabulary test for acquisition of concrete and abstract nouns in the observed intervals indicate insignificant differences between the boys and the girls.

Graph 1 – Average value in the vocabulary test for concrete and abstract nouns in the observed time intervals



Based on the linguistic material the following results were obtained. The total number of used and added new words increase until the age of four with children of both sexes. Then a reduction of the number of used words occurs. This does not necessarily imply a regression in general language development. The index of repetition is almost identical with the boys and the girls (Graph 6).

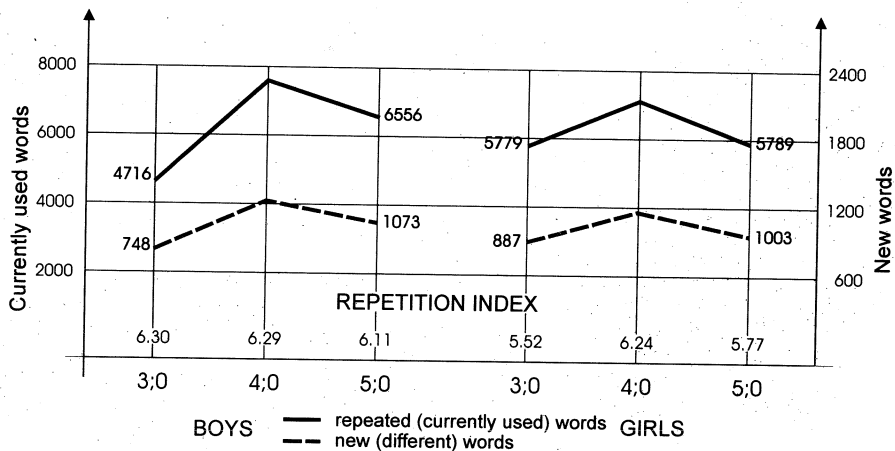
The number of sentences used in answer to a question, observed according to age groups, is higher among the boys. This difference is significantly reduced at the age of 5;0.

The average length of the sentence of the boys between the age of 3;0 and 4;0 and between the age of 4;0 and 5;0, statistically significant differences appear ($t=3.37$ and $p<0.01$; $t=2.44$ and $p<0.05$). Among the girls, statistically significant difference appears only between the age of 4;0 and 5;0 ($t=3.00$ and $p<0.01$).

Statistically significant difference in the average length of the sentence between the boys and the girls appears at the age of 3;0 ($t=2.29$ and $p<0.05$) in favour of the boys. At the age of 4;6 and 5;0 this difference disappears.

In the group of girls, the number of words (statements) in a sentence always appear in couples. Among the boys at the age of 3;0 there are also statements with the odd number of words – one or three.

Graph 2 – The total number of used words, new words and the repetition index in the vocabulary test



Based on the obtained results in the vocabulary test, it can be concluded that acquisition of vocabulary is not a completed process at the age of five.

RESULTS OF CHECK-UPS

– Health status of newly-born infants –

Deviations from normal health were discovered in ten infants. These children were born with asphyxia, jaundice of unknown origin or hypotrophy (small-for-dates).

All the children were born after normal gestation time. Until the age of five, their entire development corresponded to their age.

– Anthropometric Measures –

The boys body mass and length at birth 3.470/51.0; 3;0 15.975/97.7; 5;0 20.793/114,5. Girls: 3,470/51,3 ; 3;0 15.610/97.0; 5;0 19.718/113.0.

Anthropometric measures in all age groups have the character of normal distribution of leptosomatic type.

– Illnesses –

All the children occasionally suffered from infections of respiratory organs in all the observed age groups. They form 75% of all diseases. The other diseases were chicken-pox (Varicella), mumps (Parotitis epid.), diarrhea, jaundice (Hepatitis inf. ac. – typeA) and M. Schonlein-Hennoch.

– Psychomotor Development –

Brinet-Lesine's scale of psychomotor development served as the basis for formation of this test for the purpose of obtaining the rough estimate of psychomotor development.

Based on mean values and the t-test it can be seen that there are no differences between the sexes in the same age groups on a statistically significant level.

Statistically significant differences, observed longitudinally, appeared even in short time intervals, both among boys between the age of 3;0 and 3;3 ($t=2.85$ and $p<0.01$) and among girls ($t=4.85$ and $p<0.001$). High statistically significant differences appeared again between the age of 3;9 and 4;0.

Among the boys between the age of 4;0 and 4;6, a statistically difference appears amounting to $t=2.45$ and $p<0.05$, and among girls it appeared only between the age of 4;6 and 5;0 with $t=2.82$ and $p<0.01$.

– Education level of Mothers –

Concerning education of mothers, the group was more or less homogeneous. In the group of the boys, the number of mothers with higher education was somewhat greater. Not a single mother was illiterate.

CORRELATION

Results show that the most influential factor which affects development of a child is psychomotor development. Body mass at birth, length at birth and education of the mother follow. Health status at birth appears as the most frequent factor, but equally psychomotor development and body mass at the moment of testing. Body mass and length at birth follow, and height at the moment of testing as slightly less frequent factor, along with education of the mothers, and then diseases as a considerably less frequent factor.

It is obvious that there is an interdependence between the observed indicators of physical health and the investigated parameters of speech behaviour in all age groups, but these relations are not of equal intensity in all the observed time intervals.

CONCLUSION

The presented sample is representative for the so-called normal population. Deviations in the health status at birth and diseases which appeared until the age of five did not have negative effects on the investigated forms of speech behaviour, since they were short and of minor intensity.

The obtained results of the articulation and vocabulary indicated that these is not a completed process at the age of five.

REFERENCES

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