TALLINN UNIVERSITY
DISSERTATIONS ON SOCIAL SCIENCES

TIIU TAMMEMÄE

The Development of Speech of Estonian Children Aged 2 and 3 Years (based on Reynell and HYKS test) and its Relations with the Factors of the Home Environment

Abstract

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Institute of Educational Sciences, Tallinn University, Estonia.

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THE DEVELOPMENT OF SPEECH OF ESTONIAN CHILDREN AGED 2 AND 3 YEARS (REYNELL AND HYKS TEST) AND ITS RELATIONS WITH THE FACTORS OF THE HOME ENVIRONMENT

Abstract

In a child's development, first three years are considered to be decisive, since during that period the child's development takes place extremely tempestuously and everything gives base to the child's further development. Speech has an important role in the child's development and its importance grows with the child. Interferences in speech development in the early ages play a huge risk in later disorders in learning and also related to it, in the forming of lack of quality in cognitive and social development. That is why it is very important in the position of the child's further development to diagnose and start speech therapy as early as possible.

The aim of this current study was to clarify the understanding of speech and the level of vocabulary in children aged 2 and 3 years and to find connections between the level of speech development and the conditions in home growing environment. The hypothesis posed in this paper about how the English originated Reynell test and Finnish originated HYKS test are suitable for evaluating the level of Estonian children's speech development, was partially affirmed. The parts about understanding speech in HYKS and Reynell tests were very suitable among Estonian children. The results of Estonian children were analogous to the ones taken in the test's homeland. The hypothesis was not affirmed in the part of the Reynell test about valuing the level of expressive speech. The text of the test would presuppose significant differences to find out the level of development of expressive speech of children who speak Estonian as their mother tongue.

The study of children's growing environment showed that in the stages of development taking place in the early ages, both saying the first words and making first independent steps, allow predicting further speech development. From the conditions of growing environment observed in the current paper, listening to bedtime stories, the mother's high level of education and mastery in foreign languages, give positive influence to speech development. Material wellbeing is also part of the conditions of successful speech development, as the children from families with very little income gave lower test results in all age groups than the children from families with big income. Girls achieved better results in the tasks of understanding speech, but no significant statistical differences occurred when determining vocabulary.

The role of speech and verbal communication in the child's development cannot be underrated. The whole regulation of the child's actions, acquiring and using new knowledge in every subject field is based on that. Children are very different in their pace of development and that is why it is difficult to determine concrete competence. Children's development should definitely not be judged on separate indicators of development (e.g. speech). While observing the child's development, the child should be emanated as whole, from which the speech only forms one, true, important part.

LIST OF PUBLICATIONS

I. Tiiu Tammemäe 2008. The development of speech of Estonian children aged 2–3 years and its relations with the factors of the rearing environment. – *Problems of education in 21st Century* (artikkel on vastu võetud avaldamiseks).

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CONTENTS

1. INTRODUCTION

During preschool age a child develops fast – the whole cognitive development during this period is closely related to speech and language development. Although during preschool age child's intellectual development undergoes important changes and these become expressed in speech, age-related speech and language development are very important. Early diagnostics of speech and language development disorders and speech therapy are an important condition of further age-related development.

Environment's importance for child's development compared to genes has been evaluated differently; in general it falls between 20–60% (Rowe, Jacobson, Van den Oord 1999). This difference is probably related to the differences in home environments. The more attention we pay to the quality of the home environment, the more we are able to support and help child's development. Thus, one can say that the environment plays an important part in how and to what extent individual's intelligence becomes manifested. The environment can be supporting, but also restraining.

According to Gottfried, Gottfried, Bathurst & Guerin (1994: 167) environment plays a very important role in child's intellectual development and development of skills. When knowing the factors that influence child's speech and general development favourably, educational scientists are able to give parents suggestions about how to develop the child with success.

1.1. THE NATURE OF SPEECH AND LANGUAGE AND ITS RELATIONS WITH COGNITIVE DEVELOPMENT

Speaking is one type of human activities, which is guided and regulated by the functional system of speech. Analysis of speech look at the creation and perception of speech, the acquiring and use of speech, the oral and written speech and the inner speech (Karlep 1998: 54).

Man has the ability to use conditional symbols – signs that have a certain content and idea. Man's ability to symbolise is most spectacularly expressed by human language, which is more elaborate than whatever artificially created sign system and more universal than all special sign systems altogether (Hint 1978: 7–8). Speaking ability is most accurately viewed in its biological and social unity. Man has biological premises for learning to speak. The social aspect of the ability to speak lies in the fact that the biological premises are realised only in a group. Child needs a language environment and age related activities that activate communication. In case of limited communication the development of speech takes longer time (Karlep 1998: 60). The fact that children learn in certain times and in certain order is determined by nature, while what exactly will they learn has to do with culture (Fukuyama 2001: 168–169). Child acquires the language that is spoken in his/her language environment. In case of hereditary speaking ability, all people or at least larger groups would speak one and the same language.

It appears that it is not so much possible to teach children to speak, since they rather learn it themselves. Although imitation and following a model are important factors in terms of language development, it has so far not been precisely found out, how exactly children start to speak. One principle is meaningful for early development – children learn to speak through speaking, thus creating possibilities for speaking is very important (Croft 1995: 158). The point of view that children, who are not in a normal environment during the development of

speech (0–36 months), also do not acquire equal results compared to their peers, even if their development is significantly stimulated, is absolutely understandable (Tod, Blamires 2001; Kivi, Sarapuu 2005; Daniels, Stafford 2004).

In early childhood language is an indicator of cognitive development. During this period language has a multifunctional role in changing cognition and communication. The goal of language is to show the development of biological and socio-cultural situations; language is a means through which one passes on knowledge and culture.

Vygotski analysed the relationship between play and development. Play is the basis for development, since it creates the zone of proximal development. In play a child is always one step ahead from his/her everyday behaviour and development. Play is related to changing needs, to the development of the motives of will, to the behaviour in the imaginary. All this makes play very relevant for child's development, since through play a child develops. Therefore, play can be called the main activity of a child in preschool age or the main activity that directs development (Vygotski 1966: 62–76). According to some studies children who do not play or who are paid very little attention to, have 30% less neuronal connections in the brain compared to their peers (Nash 1997: 52).

Taking into account the relationship between speech and psychological processes enables to appoint the accomplishable level of learning, to understand what and in which situation the child speaks, how he/she comprehends speech, and which means of language he/she masters. Speech cannot develop and function apart from other psychological processes like perception, memory, thinking, and emotions (Karlep 1998: 31).

As the child develops the mutual relationships between psychological processes undergo a change. In accordance with the developmental phase, the leading processes can be perception (4–5 years), memory (up to 12–14 years), and finally, thinking. During every step of development the content and comprehension of speech depends on the most leading process. At the same time speech in turn has an impact on accomplishing intellectual operations, thus, on psychological processes in general. Up to the age of 5 child's psychological activities are dominated by perception – child explores the environment and gets to know it. On the bases of perceptions appear concrete and thereafter general memory images. The main function of memory during this phase is to recognise familiar objects. At first the child talks only about what he/she perceives – speech is situational and depends on child's activities. Understanding speech too depends on the perceived situation. Approximately around the age of 5 memory develops fast and becomes the main cognitive process. Characteristic to this age is that perception intertwines with memory images, and develops speech, which is external to the situation. On the basis of egocentric speech develops inner speech, which allows to operate with memory images and to start regulating its activities. Thinking becomes the main psychological process at the age of 12–14. Characteristic to this is the intertwining of perception, memory and thinking. On one hand perception and memory give material for thinking, on the other one remembers and recalls through thinking (Karlep 1998; Wood 2003; DeLoache 2005).

1.2. DEVELOPMENT OF SPEECH

Still a couple of decades ago it was believed that child's speech development can be facilitated from the moment when he/she starts to speak. By now we know that many problems can and should be dealt already during the pre-speech period (Kaasik 1999: 47). Speech and language disorders appear approximately in one child out of 20, i.e. 5%. These disorders appear (with

small exceptions) despite of the family, race, level of cognitive development, and other factors. Speech disorders have a potentially devastating influence in personal, social as well as in academic spheres. This fact makes avoiding and correcting speech problems one of the main challenges of education (Reynolds 1995: 173–174).

During the first year the guiding activity is immediate communication with the grown-up, in response to which the child develops a communication need with other people, an emotional attitude to them. Child's whole behaviour during this period is directed to one thing – making social contacts (Lunge et al. 1978: 5–6).

The closer to the second birthday the more the child starts to understand sentences outside the familiar context. Together with understanding speech develops active vocabulary; the child starts to use different types of words and to respond to speech with speech. Length of the sentences can already be 2 words; however, the order of the words might not yet be right. Child's first sentences are characterised by the so-called telegraphic style: it lacks such grammatical morphemes as inflections, post- and prepositions, *being*-verb, etc (Leiwo 1993: 92).

Three-year-old child's vocabulary has shown ambivalent results when using different methods in different countries. Optimal has been considered to be a vocabulary that includes from 250–300 words (Bortolini et al 1992: 418) up to 1000 words (Koolieelsest kasvatusest… 1979: 19). 1–3-year-old child's main activity is manipulating with things, thus through this he/she learns to use them in ways that the society dictates. In cooperation with grown-ups develops speech and sensory-motor thinking (Lunge et al 1978: 5–6). The ego-centric speech (repetition, monologue) develops more and more the characteristics of social speech: important becomes communicating with other people through speech (Hennings 2000: 83).

At the age of four the child has developed a broad and active vocabulary and uses all the main types of sentences. He/she understands also the meaning of less frequently heard words and knows how to use elaborate grammatical expressions, like negation and the past tense simultaneously (Ward 2001: 234–240). The basic vocabulary constitutes the bases of all vocabulary. It includes relatively short and neutral words that can be used in several contexts. In case the child's developmental level does not allow to make notional generalisations, predominates a vocabulary that relies on basic categories and this should be taken into account in case of testing (Karlep 1998: 84). According to some studies a 4-year-old child should use 90% of grammatical forms in the right way (Deal, Haas 1996: 111–116). According to the developmental stages of child psychologist Jean Piaget the age from 2 to 4 years constitutes the early pre-operational stage, where the child understands words, but interprets sentences with the help of context and experiences (Leiwo 1993: 104; Hennings 2000: 88).

The speech of a five-year-old child is fluent and understandable for everyone. Disappeared has the soft pronunciation characteristic to a small child. There can still be inaccuracies in terms of single sounds (r, s, l). The child is fascinated about new and interesting words, which are exciting to play with. He/she is interested in jokes and sayings. The child speaks a lot also when alone and expects explanations and justifications for everything and “bothers” parents with questions. By the age of five the child should have acquired all sounds used in the mother tongue (Mannerheimi… 1993).

Six-year-old child’s vocabulary is estimated to have 3–3.5 thousand words (Razvitie retši 1984: 79), some studies give a result of 2562 words (Oksaar 1987: 187). A six-year-old child is able to make several observations about the surroundings and express them in speech. His/her active vocabulary includes already expressions of direction, time, quantity and extent, numbers from one to five, concepts of amount.

A seven-year-old child should be ready for school. A child who goes to school should be able to reason, to find the causes of phenomena, to be able to make decisions on the level of visual-schematic thinking. Children should be able to describe in a related and understandable way the characteristics of familiar things and phenomena, to talk about their own thoughts, to explain situations. The child develops an observation skill or how to listen, to explore, and to focus attention on less interesting tasks. Differentiation and meaningfulness of perceptions gives among other things the ability to differentiate the important from the unimportant. In addition to verbal expressions one should also look at the accuracy of following a verbal order (Martinson 1998). Verbal competence is one of the most important indicators of school readiness. In order to understand others' speech and to express oneself in an understandable way, one must have a sufficient vocabulary and skills to understand and use grammatical forms. A child must pronounce all sounds in the right way and to speak clearly and understandably. A child who starts attending school uses compound sentences, is able to reason logically, and understands cause-effect relationships.

According to child psychologist Jean Piaget's developmental stages a 4–7-year-old child (can last until the age of 11) is at the end of the pre-operational stage and in the concrete operations stage. The child understands words and simple structures, but his/her comprehension of speech can also be influenced by the speech situation. Understanding elaborate expressions is influenced by what experiences one has had (Leiwo 1993: 104; Hennings 2000: 88).

Widening of the circle of communication demands more perfect means of communication of which the most important one is speech. In this age two developmental directions can emerge. On one hand the practical use of speech becomes perfected as a means of communication – this is the communicative and behaviour-regulating function of speech. On the other hand speech becomes the means of thinking and the bases for perfecting further psychological processes (Mehilane 1988: 37).

2. METHODOLOGY OF RESEARCH

During the preschool age child's speech is an important indicator of cognitive development. A rather early diagnose of speech disorders and starting a respective speech therapy are very important for child's development as a whole. Speech therapists need in their work standardised tests, the use of which gives an objective evaluation to the level of child's speech and is an important bases for the diagnostics of speech and communication disorders and for planning further speech therapy. Such tests have so far been unavailable in Estonia and speech therapists have tried to develop child's language skills relying on their subjective professional experiences and skills.

Studies of language development have so far mostly included the preschool age (5–7 years). Studying the speech of 2;0–4;0 year-old children in such an extensive way has according to the author of the current work not been undertaken in Estonia.

When studying speech one must take into account the fact that testing is significantly more superficial than studying spontaneous speech, but is the only way how to control all necessary and/or planned units and the only means to observe a big group of children on equal bases (Bloch 1996: 77). Administering tests should be one part of a complex study of the child. The hypothesis of this work was, that Reynell test can be used for assessing the level of how well Estonian children comprehend language and HYKS test can be used for testing Estonian children's vocabulary and hypothetically there are no differences between girls and boys results.

The aim of the current study is to find out children's level of comprehending language and vocabulary at the age of 2;0 to 4;0 and to find relationships between the level of verbal development and home environment conditions.

Concrete tasks:

1) to find out whether the English Reynell test is adjustable to use to test the understanding of the Estonian children's speech;
2) to find out whether the Finnish HYKS vocabulary test is adjustable to use to determine the level of vocabulary of the Estonian children;
3) to find out the differences between the levels of understanding speech and vocabulary of boys and girls;
4) to find out which conditions of the home growing environment (cultural, social, material) most favour the development of the child's speech and language.

Method:

1. Reynell test for studying comprehension of language
2. HYKS active vocabulary test for indicating the level vocabulary use
3. A questionnaire for parents for studying children's rearing environments

Testing children took place in Tallinn children's institutions between September 2004 and January 2007. Testing was administered individually and depending on the child it took 30–50 minutes to complete the test. All children were tested by the author of the current work. Parents were asked to fill in a questionnaire within one week and in case they were interested, they received oral feedback about their child's verbal development.

Tests were taken in 12 randomly chosen day care centres in Tallinn. Altogether 333 children participated in the study. The sample of children included 164 girls (49%) and 169 boys (51%). In order to calculate the results, children were divided into 4 age groups were formed

by 6 months (2;0–2;5, 2;6–2;11, 3;0–3;5 and 3;6–3;11). The first test administered was the part A of the Reynell test, which assesses child's language comprehension level. The second test was the HYSK active vocabulary test. After completing the test each child was praised irrespective of his/her result.

The mean age of parents was 29.8 years. The average age of mothers was 26.6 and fathers 33 years.

2.1. REYNELL TEST

For assessing the level of how well children comprehend language the current study used the *Reynell Developmental Language Scales III* (henceforth Reynell test) (http://www.superduperinc.com/products/). The first Reynell test for appointing the level of language development was published in 1969. The current version is the third one (Edwards at al 1997). The test is meant for children aged 1 to 7 years and it focuses only on appointing the level of speech and language development. This test doesn't pay attention to phonetic problems. For developing the Estonian language test both the English as well as the Finnish language version were used as a model. The test includes two parts: a scale for language comprehension and a scale for expressive speech. The current study used only the scale for language comprehension. In order to carry out testing, toys and picture books were used. At first comprehension of single words was observed, after witch the skill of understanding more elaborate sentences was studied. Age norms for children were given month by month.

2.2. HYKS VOCABULARY TEST

HYKS active vocabulary test (*HYKS'in sanavarastotesti*) is very popular among Finnish speech therapists. It was first used in the Central Hospital of the University of Helsinki (*Helsingin yliopistollinen keskussairaala* = HYKS). In 2002 Oulu University carried out an extensive survey in Finland, as a result of which it appeared that 53% of Finnish speech therapists use HYSK vocabulary test in their everyday work (Huttunen 2005). During testing a classical method is used, where a grown-up puts on the table in front of the child pictures and the child has to name the object on the picture. In case the answer is correct, the child receives 1 point and in case it is wrong 0 points. Some pictures allow also several correct answers (mug, cup).

The age norms of children's results are given by 6 months.

2.3. QUESTIONNAIRE FOR PARENTS

In addition to studying children's speech the current study included a questionnaire for parents. The aim of this questionnaire was to assess the rearing environment and clarify its relations with the level of verbal development. Thus, the questionnaire tried to bring forth children's cultural, social and economic growth environments. Used was a semi-structured questionnaire, where the parent had to mark one suitable answer and in case there was none to add his/her own version. The questionnaire was created by the author of the current article.

3. RESULTS OF RESEARCH

3.1. THE RESULTS OF THE TESTS

When summing up the analysis, it appeared that when comparing the Reynell test responses with those of the HYKS active vocabulary test, those children who obtained better results on the former performed also better on the latter. There was a strong statistically significant (p = .000) correlative relationship between the results of the two tests (r = .768). As expected, those children who comprehend language better possess also a wider active vocabulary.

Comparing the results of boys and girls indicated that in general girls received slightly better results. In case of the Reynell test of how well children comprehend language this difference was statistically significant (p = .021). When comparing the HYKS test results, there were no statistically significant differences between the levels of boys and girls (p = .145).

Table 1. Results of tests

age	**Reynell**			**HYKS**		
	average	girls	boys	average	girls	boys
2;0–2;5	26	26,4	25,5	24,6	23,8	25,4
2;6–2;11	27	28,4	23,1	24	25,1	23,1
3;0–3;5	34,7	36,1	33,3	35,8	36,4	35,2
3;6–3;11	39	38,5	39,4	38,9	40,6	37,9

In three age-groups there girls have better results than boys on the Reynell test. The most big difference between girls and boys was in age group 2;6–2;11, girls performed better on the language comprehension test, receiving on average 5.3 points better results compared to boys, at most the difference was +/- 2 points. One characteristic of this age group was that 9 of the weakest results belonged to boys.

Analyses of the HYKS test results indicated, that also here in three age groups there girls have better results, but here are not so big differences. The biggest difference was in age group 3;6–3;11, there girls have got 2.7 points more, in another age groups it was +/- 2 points.

3.2. THE RELATIONSHIP BETWEEN LANGUAGE DEVELOPMENT AND HOME ENVIRONMENT

Many genetic effects become apparent through the genes-environment correlation. In an active gene-environment relationship individuals can unconsciously choose environments, which support their genetic potential. For example, intelligent children can enjoy reading more than less intelligent ones. Teachers too can see greater potential in intelligent children and support and encourage them more in their studies (Rowe, Jacobson, Van den Oord 1999).

Bachmann and Maruste argue that differences in IQ are 70% determined by genes and 20% by the so-called shared environment factors and 10% by the unshared or specific environment factors or events, which have a different influence on family members. The richer the language and communication, the more developed and richer is the person (Bachmann, Maruste 2001: 191–201).

The questionnaire was composed so that it would give enough data about the children and depending on the results of the performed tests, analyze which growing environment would be the best to predispose the child's speech development. Questions concerning the child's development during the first year were asked to answer: the child's general state of health, the time when the first steps were made and the first words said. Many questions were about the parents: their education, area of expertise, mastery of foreign languages on the communicative level. Many questions about the children's home growing environment interested me. Were there significant differences in the level of speech between the firstborn child and the next ones? In the viewpoint of speech development, does it matter if and how many books are being read to children at home? Or how often are children taken to events outside their home? Would the child's level of speech development be higher, if the financial situation at home could afford to buy him/her more developing toys? If the child is growing in the family of parents that are more interested in culture, is his/her vocabulary bigger? Concerning the existence of cultural interest are questions about going to the cinema-theatre-concerts and subscription of newspapers-magazines at home, also the habit of watching TV. To clarify if the parents can objectively assess their child's speech, the parents were asked to give their evaluation on the child's development at the moment and the expectance on the successive.

3.3. THE RELATIONSHIP BETWEEN LANGUAGE DEVELOPMENT AND THE TIME FOR SAYING THE FIRST WORDS

Criterions of recognizing the first word are linguistically quite hard to determine. The following aspects should be paid attention to:

- The word has an obvious concrete meaning
- Spontaneous using + combination of different sounds (not only imitating/repeating the adult's speech)
- The word has to sound similar to the corresponding word in the adults' speech

Depending on the method how the first word is evaluated, that age is different, but usually it stays between the 10^{th} and the 13^{th} month. In general the first words is made up of 1–2 syllables, most of the time it is an open syllable (consonant + vowel). Rarely the first word contains a compound-consonants or a diphthong (Dale 1976: 7).

Opinions about when do the first words appear vary among different authors, but the most common view is that child says his/her first real word around the first birthday. Studies by Smith and McCartney showed that the first word appears already in 8-month-old children (Oksaar 1987: 187). Chapman (1992: 66) presumes that the first word appears in the 11th month. The studies of other authors argue that a child should have 10–12 words in his/her active vocabulary by the time he/she is one year old (Razvitie retši 1984: 79), others find that an optimal number is 9 words (Koolieelsest kasvatusest… 1979: 19). Nelson (1973) marks that more important than the age of when the first word appears should be considered the age when the child has 10 words. In Nelson's studies this was on average around 15 months.

Saying the first words cannot be considered to be a condition of the home environment, but it is undoubtedly an emotional sign about child's development. Parents marked 8 months as the youngest age for children to start saying words and 16 months as the oldest. According to parents the average age when children who participated in the study started to say their first words was 10.05 months.

It appeared from the analyses of the responses that in all age groups those children who started to say words earlier, received also better results on the vocabulary test. Children who obtained better results said their first word on average at the age of **9.5** months, while children whose results were lower started at **10.6** months. There was, however, no statistically significant differences between the test results and saying the first words (the relationship with Reynell test was significant at $p = .317$ and with HYKS test at $p = .189$).

3.4. THE RELATIONSHIP BETWEEN LANGUAGE DEVELOPMENT AND MAKING THE FIRST STEPS

In addition to verbal development in the first year of life children also make big progress in physical development (turning, crawling, sitting, walking) – the speed of this is expressed as motor intelligence. Studies show that the higher child's motor intelligence at the age of 12 months the earlier he/she says the first words (Veisson 2001).

According to literature children make their first steps around the first birthday, however, the parents of the children participating in the current study gave different results. The earliest first steps were made in the 5th month – probably parents of those children thought, that the first step was made with significant help from parents, not steps made completely independent – and the latest in the 16th month. On average children started to make their first steps at the age of 10.8 months.

When children were distributed into two groups according to the median of the test results, it appeared that in each age group those children who made their first steps earlier obtained also better results on tests. Those children who started to walk later, performed also worse on tests.

Children who received better results, started to walk on average at **10.6** months, while those who received weaker results started on average at **11.05** months.

Statistically significant differences appeared between those groups of children who started to walk before the 8th month and those, who made their first steps later than 12th months ($p = .045$). Between other groups the differences were not statistically significant.

3.5. THE RELATIONSHIP BETWEEN LANGUAGE DEVELOPMENT AND READING A BED-TIME STORY

Listening to a bed time story is an emotional activity, which is supposed to create a calm atmosphere and develop child's fantasy and imagination. The questionnaire given to parents allowed the following responses: every day, a couple of times per week, once a week, seldom, never.

It appeared from parents' responses that on average 2/3 of the children listen to a bed time story every day or a couple of times a week. The story is predominantly read by mother (81%), while other family members do it significantly less frequently. Worrisome is the result that 21% of children hear it seldom or never. On many cases parents had written a commentary that the child is still too small for a bed time story. At the same time it is possible to find age-related stories for every age. However, it is not clear from the responses whether this shows parents' unawareness or unwillingness.

Children who were read stories, obtained on average 6.3% better results. A statistically significant difference appeared in case of both: the Reynell test (p = .004) and the HYLS test (p = .025).

Analysis of the research results indicates that as expected the biggest differences appeared between those children who hear a bed time story every day compared to those who are never read one. The difference is statistically significant both in case of the Reynell test (p = .001) as well as the HYKS test results (p = .029).

3.6. THE RELATIONSHIP BETWEEN LANGUAGE DEVELOPMENT AND PARENTS' LEVEL OF EDUCATION

According to the last census 12.8% of Estonian city people have higher education, 17.4% applied secondary education, 29.2% secondary education, 12.5% basic education, 6.7% without basic education, 2.3% unknown (http://www.stat.ee/files/koolinurk/rahvaloendusest/tulemused/haridus.php).

The educational level of parents who participated in the current study was higher than the average of Estonia. Altogether 69% of parents had higher education (Bachelor's and Master's degree, diploma or applied secondary education), 23% had secondary education and 8% basic education. Nobody marked a lower educational level. The reason for this can be considered to be the fact that mostly young persons from Tallinn participated in the study, while the statistics from the census includes the whole population of Estonia.

Of participating parents mothers had on average a higher education than fathers. 66% of the fathers and 73% of the mothers had higher education (Bachelor or Master's degree), 24% of the fathers and 21% of the mothers had secondary education, and 10% of fathers and 6% of mothers had basic education.

The educational level of mothers and fathers was moderately correlated (r = .392), thus the educational level of both parents was rather likely equal.

Comparing the children of mothers with basic education to the children of mothers with a Master's degree, it appeared that in all age groups children, whose mothers had higher education, obtained better results. On average the children of mothers with higher education received 4% better results. It is important to note the fact that although all age groups had a tendency where children of mothers with higher education obtained better results on the vocabulary test, the differences between the results in all age groups were not absolute. However, in all age groups those children, whose mothers had basic education, obtained lower results compared to other children.

A statistically significant difference between the level of parents' education and development of children's language didn't appear.

3.7. THE RELATIONSHIP BETWEEN LANGUAGE DEVELOPMENT AND PARENTS' FOREIGN LANGUAGE SKILLS

According to the last census 72% of Estonian citizens spoke at least one foreign language and 28% knew only their mother tongue. At the same time foreign language skills differ in different age groups. In general, younger persons have better foreign language skills – of 20–24-year-old respondents 85% speak another language (http://www.stat.ee/files/koolinurk/

rahvaloendusesttulemused/keeled.php). The parents of the children who participated in the current study were asked about their abilities to communicate in a foreign language. It is positive to note that only 4% of the parents lack a foreign language skill. 2/3 of the parents speak 2 or 3 foreign languages. Maximally, knowledge of 5 foreign languages was marked.

Parents' foreign language skills might not have a direct relationship with child's language development, since parents do not communicate with children in foreign languages but in the mother tongue. However, foreign language skills in general show a wider range of interests, erudition, better linguistic competence, and more conscious attitude toward language as a means of communication.

When comparing the results of the children who participated in the study, an expected tendency emerged. Namely, children whose parents spoke more foreign languages obtained better results on the vocabulary test. When comparing the children of parents who do not speak foreign languages with those whose parents speak 3 or more other languages, it appeared that in every age group the latter obtained more points (Reynell test $p = .008$; HYKS test $p = .055$). On average, children whose parents spoke 3 or more languages received 6% better results compared to children whose parents spoke none or only one foreign language.

As an exception one can name children in the 3;0 to 3;5 age group, where children whose parents spoke 3 or more foreign languages received only 1% higher results than children whose parents do not speak foreign languages. Moreover, those children whose parents spoke 2 foreign languages obtained the best results – 50% of correct answers, which is 8% more than children whose parents do not speak foreign languages.

Statistical analysis indicated that the correlation between foreign language skills of mothers/fathers and child's language development is small (with Reynell test $r = .206$/ $r = .186$ and HYKS test $r = .188$/ $r = .175$), but nevertheless statistically significant. Relations with mothers' foreign language skills were in case of the Reynell test significant at $p = .022$ and HYKS test at $p = .037$. In case of fathers' foreign language skills the relationships were significant at $p = .044$ and $p = .059$ respectively.

3.8. THE RELATIONSHIP BETWEEN LANGUAGE DEVELOPMENT AND FAMILY INCOME

Parents of children who participated in the study were also asked about the average income per on family member. In case of these answers one must nevertheless take into account the fact, that since the time this questionnaire was first administered, changes in the Estonian economy have also significantly changed the average wage. In 2003 the average wage was 6723 croons and the average income per one member of the household was 2789 croons. By the year 2005 the average wage had increased to 8073 croons and the income per one household member was up to 3475 croons (http://pub.stat.ee/px-web.2001/Database/Majandus/Majandus.asp).

The most common income for one family member, in families that participated in the current study, was 2000–5000 croons per month. 14% of the families had to manage with less than 2000 croons for one person, which means living under the poverty threshold. 4% of the respondents had marked their income per one family member to be over 10 000 in month.

The results of the study indicated that in every age group children from families with smaller incomes received less points on the vocabulary test compared to children from families with higher monthly incomes. When comparing the incomes of the families in the lower and the upper end – those who receive 2000 croons versus those who receive 10 000 croons per one family member – it appears that on average children from families with very low incomes (up to 2000.-) obtained 12,4% lower results compared to children from families with high incomes (more than 10 000).

There were no statistically significant differences in case of the different incomes neither with the Reynell test (p = .954) nor the HYKS test (p = .365). A reason for this could be the fact that the number of children in different income groups was very different.

Family incomes had a very significant relation with the birth order of the child in the family (p = .002) and the size of the family household (p = 000).

3.9. THE RELATIONSHIP BETWEEN LANGUAGE DEVELOPMENT AND THE FREQUENCY OF EVENTS ATTENDED OUTSIDE HOME

Parents were also asked questions about what events outside home the child, the mother, and the father attend together (cinema, theatre, concert, visiting friends, etc). The responses were: several times a week, once a week, a couple of times in month, once a month, once a year, very seldom, not at all. It appeared that 71% of the children attend events outside home once or more times per week. 10% of the children go out once a month or less.

Without children parents go out significantly less often – 25% of parents go out once a year or even less. 5% of parents claim that they never go out. The questionnaire did not give much information about the reason for not going out – is it lack of interest, time or money. At the same time the tendency that the child is taken out a lot is in every way positive and it rather shows the interest of families to spend time together and expresses their wish to spend as much time as possible with the child.

The analyses of the study results tried to find out to what extent is taking the child to events outside home related to language development. In general the differences were in the limits of 1–2%. One exception was the age group from 2;6 to 2;11, in case of which the results of children who go out several times a week was 9% better from the results of children who go out once a month or less often.

There were no statistically significant differences in case of neither – the Reynell test (p = .364) nor the HYKS test results (p = .943).

CONCLUSIONS AND DISCUSSION

The aim of the current study was to find out the level of 2;0 to 4;0 year old children's understanding of speech and vocabulary and to find relations between the level of language development and the conditions of the home rearing environment.

About 5% of preschool children have speech and language disorders and in case of different methods this indicator can be even up to 20% (Reynolds 1995; Malm 1999). Speech and language development disorders in early childhood are a big risk factor for developing later studying disorders and they are related to a qualitative lack in cognitive and social development. Therefore, early diagnosing and speech therapy are very important in terms of child's further development. In order to evaluate objectively the level of language development speech therapists need different speech and language tests. One of the aims of the current work was to adapt the Reynell and HYKS tests into Estonian language and to do a primary analysis of the results of Estonian children.

The hypothesis of this work about Reynell and HYKS tests eligibility was confirmed – those tests can be used for find out objective results about Estonian children's speech and language development. Using the chosen tests – Reynell test for comprehending language and HYKS vocabulary test was justified. The obtained results were similar to those in the countries of origin of the tests (Reynell test in the UK and HYKS in Finland). Estonian speech therapists could use these tests in their everyday work for diagnosing speech problems and for planning speech therapy. However, a final standardisation of these tests would need a more extensive research. In comparison of concrete statistics, the reason of relatively lower results obtained of Finnish children compared to Estonian children on the HYKS test are most probably due to the fact that the measurements of the former were done a couple of decades ago and would most probably be higher today. The reason for the relatively better results of children from UK on the Reynell test can be due to the fact that this specific test was developed in UK and something could have become "lost in translation" in the Estonian version. For the comparison and analyses of exact results it would be necessary to include more children in every age group.

In general girls are considered to be verbally more talented and it is presumed that they outperform boys in terms of verbal development. The hypothesis about fact, that boys speech and language development is equal to girls, was assure partially, hereafter it is necessary to test more children to find out statistically significant results. Comparing the results of boys and girls, the results of girls were somewhat better and there were statistically significant differences in the results of the Reynell test (p = .021). In case of the HYKS active vocabulary test the differences were not significant. Thus, one can conclude that girls are somewhat better in comprehending language compared to boys, but apparently there are no significant differences in their levels of vocabulary.

A lot of attention in recent years has been turned to the early rearing environment of children and its influence on child development side by side with heredity has been proved. According to different sources environment constitutes 20–60% in the development of intelligence, thus, one can presume that such difference in percentages is largely related to differences in rearing environments. The more we turn attention to the quality of the rearing environment, the more we are able to support and help the child through it.

The answers of parents gave information about when children said their first words and made the first steps. Although these relations were not statistically significant, there was a tendency that those children, who started to say words earlier, obtained also better results on the vocabulary test. On average, children who participated in the study started to walk at the age of 10.8 months. There was a correlation between the test results and the time when children

started to walk – in all age groups those children who made their first steps earlier, also received better results on the tests. Statistically significant differences appeared between the results of children who started to walk before 8 months and after 12 months.

According to the results of the study reading bed time stories has a good influence on child development. There were statistically significant differences in this area, while children who fell asleep with a bed time story had better results on tests. Although 2/3 of the children participating in the current study can hear a bed time story every evening, 1/5 of the children are never read a story in evenings. Young parents should be told about this traditional evening activity. One only needs to choose an appropriate literature suitable for the age and skills of the concrete child. Also previous researches in Estonia found out, that those children who can listen bedtime story, can have the highest intelligent (p= .015) (Veisson et al 2001).

There were no statistically significant relations between parents' educational level and children's level of verbal development. Although, there was a tendency in all age groups that the results of the children whose mothers had basic education were lower from those children whose mothers had higher levels of education. However, children of parents who spoke more foreign languages, thus, were verbally better educated, obtained better results on tests. The researches makes earlier assess, that there is a strong correlation between mothers education and children's mental intelligent (r= .409, p= .012) (Veisson et al 2001).

The study showed that the majority of children in the current study came from families with average incomes. Economically well off families (more than 10 000 croons per family member in month) made up only 4% of the sample, while 8% of the children live under the poverty threshold (less than 2000 croons per person). Since the number of children in different income groups was very different, the differences between different levels of language development were not statistically significant. The earlier researches in Estonia confirm – if the income for one person in family is bigger, then have children better language development (p= .010) (Veisson et al 2001).

The analyses of the study results tried to find out to what extent is attending children's events outside home related to the level of language development. In most cases the differences were around 1–2% and statistically not significant. It appeared that the majority of children (71%) go out with their parents at least once a week to events such as theatre, cinema, long walks, visiting friends, etc. About 10% of the children go out once a month or less frequently.

To sum it up, one can say that the earlier child starts to say the first words and the younger he/she starts to walk, the faster is his/her development of speech and language skills. The current article showed that from among the environmental factors observed reading bed time stories, higher educational level of mothers, parents' foreign language skills and family's material well-being have a positive influence on speech and language development.

The role of basic education is to support the child's development in every aspect and to prepare the child for a successful managing at school. The role of speech and verbal communication in the child's development cannot be underrated. The whole regulation of the child's actions, acquiring and using new knowledge in every subject field is based on that. A whole lot of attention in basic education is paid to developing the assumptions of literary speech – reading and writing. What should definitely not be forgotten, is that the unconditional presumption of literary speech is developed skill of oral expression. Speech and developing it in pre-school age cannot be separated from other areas of development, developing oral communication takes place daily through different activities. Children are very different in their pace of development and that is why it is difficult to determine concrete competence. Children's development should definitely not be judged on separate indicators of development (e.g. speech). While observing the child's development, the child should be emanated as whole, from which the speech only forms one, true, important part.

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