Global Model of Intelligence and Memorizing of Information from Conception until a Child Starts to Walk for the Period from 2009 until 2020.

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Abstract: - The object of analysis of this paper is global model of intelligence and memorizing of information from conception until a child starts to walk for the period from 2009 until 2020. In order to define main characteristics and determinants, the model of growth was used. The goal of the evaluation and analysis of relevant variables and resulting rates of growth was to scientifically formulate the results of a research of a synergic relation between intelligence and information memorizing. Numerous adequate scientific methods were used, the most important among them: analysis and synthesis method, inductive and deductive method, descriptive method, comparative method, statistical and mathematical method, modelling method (matrix of growth), proving and disproving method.

Key-Words: - Words: model, intelligence, information memorizing (memory), learning, health

1 Introduction

Until present the global model of intelligence and memorizing of information from conception until a child starts to walk, for the period from 2009 until 2020, was not made.

According to the defined object of scientific research the main scientific hypothesis was made: Prepare children's brain, by using scientific methods, to improve their intelligence and information memorizing until they start to walk, in order to achieve diplomas, academic master-of-science or doctor's titles. This would enable their personal progress as well as the progress of all human beings of the Planet Earth.

The scientific hypothesis defined in such a way implied several auxiliary hypotheses: 1. A mother’s health before and during pregnancy as well as during lactation period is very important for learning capability of children during their life. 2. Food influences us in a way that we are what our mothers ate as well as what we are eating now. 3. The strengthening of senses (sight, hearing, touch, taste, and scent) creates prerequisites for tracing paths into the brain. 4. Speech is a unique human ability and children have to learn it by hearing, imitating and exercising. 5. The growing standard of population is a source of endangering the global environment and threatening the survival of the population of the Planet Earth. 6. Physical activity of children is important, among other reasons, because we are determined by what we are doing. 7. Addiction in the society such as addiction to narcotic drugs, alcohol, cigarettes etc. often results in our schools being full of socially problematic children with problems of attention and learning. 8. Informatization is an important reason for the need of increasing human intelligence and information memorizing, especially because of its very fast development. 9. The globalization influences on moving the capital to states with cheap manpower which results in a bigger unemployment in developed western countries.

Until present numerous scientists have been investigating the defined object of scientific research mentioned, the scientific hypothesis and auxiliary hypotheses. Everything what happens in the brain during nine months before the birth is very important for learning abilities in a child's life [7]. Healthy food contains many nutrients good for the brain [18]. Every person acquires at least seven types of intelligence [9]. Nation which will use the possibilities of computers and internet completely, and connects them with new learning technologies, will lead the world in the field of education [2]. The problem of increase in unemployment rate in the Euro-Atlantic zone needs to be compensated by improving education of their population [17]. Boys and girls acquire 50 percent of their intelligence between conception and the age of four, which is confirmed by test results [13]. Inappropriate mother’s nutrition, smoking, drug consuming or exposition to toxic substances (such as led), lead to low weight and poor health of newborns. Later in life, heart disease, high blood pressure and stroke appear as a result of poor mother’s nutrition during pregnancy [5]. In addition to the first nine months before the child is born, the first 10 years are most important in every person’s life. In the first four years of life, 50 percent of learning abilities develop. Small children are best educators for themselves, and their parents their best first teachers [1].
Quantification of the global model of human intelligence and memorizing of information until a child starts to walk, for the period from 2009 till 2020, will result from quality research, by transforming quality parameters of the chosen model variables into numerical form.

2 How to positively affect the development of intelligence and information memorizing from conception

Most important variables of “Global model of intelligence and memorizing of information from conception until a child starts to walk for the period from 2009 until 2020.” are set and will be quantified for the period of 2009, 2015 and 2020: mother’s health before pregnancy, during pregnancy and during breast-feeding, nutrition, senses enforcement: sight, hearing, touch, taste and scent, speech, standard, physical activity, addictions, informatization and globalization.

2.1 Mother’s health before pregnancy, during pregnancy and during breastfeeding

Brain of a fetus, a newborn and a small child develops in specific phases in exactly set time. If the brain doesn’t have all the necessary nutrients for its growth, there can be a significant damage that cannot be corrected. The human brain surface consists of billions of active neurons. They will never be replaced by new ones. In the uterus, the neurons develop from conception, approximately 250,000 cells per minute. It is scientifically established that the human brain starts to grow in the uterus and develops intensively till the age of six [7]. Inappropriate nutrition of a small child can cause learning disabilities during its entire life, and it is not possible to compensate those insufficiencies whatever you do later [10]. The quantified value of the variable “Health of a mother before pregnancy, during pregnancy and during breastfeeding” quantified for 2009 is 51.

2.2 Nutrition

Inappropriate nutrition of a small child can cause learning disabilities during its entire life, and it is not possible to compensate those insufficiencies whatever you do later. The better fitness the body has, the better digestion capacity is and the blood successfully transmits the nutrients over the entire body and the brain. Healthy nutrition contains many nutrients good for the brain. What is good for the brain is also good for the body. Brain and its nervous system are especially fed by certain amino acids, vitamin B-complex, and essential fats. All these nutrients can be found in abundance in fish together with minerals potassium, magnesium, iron, and zinc. Healthy nutrition should be composed of a food containing these basic nutrients [18].

The quantified value of the model variable nutrition for 2009 is 70.

2.3 Strengthening of the senses: sight, hearing, touch, taste and scent

There are five senses which lead to the brain: sight, hearing, touch, taste and scent. Basic speech strings, as well as visual ones, are developed during the first few years of life. If a small child could clearly hear and distinguish all sounds during the first few years of life, and if it would learn to pronounce them and use them, it would be capable of pronouncing foreign languages much better, then when learning them later in life. It is necessary to identify every problem during the first three years of life, such as hearing or sight damage, because if children do not get help in these early stages of life, they will probably have difficulties during their entire life. Healthy children from good balanced surroundings learn to use at least 2,000 basic words from their mother tongue. If those children cannot hear, it will be much more difficult for them to speak fluently. If they can neither hear nor speak, it will be very hard for them to learn. Since early childhood children have to go through hearing and sight tests and most attention should be payed to nutrition and education. During the first few months of life a child will probably taste only two things: milk and vomit. Those are not very interesting tastes to distinguish. Therefore, it is recommended that mothers bring diversity into their nutrition: a bit of orange or lemon. Hearing is crucial for speech. Mothers intuitively speak to their children loudly and clearly and that is good. Listening to background music is also recommended, both before and after birth [13]. The quantified value of the variable “Strengthening of the senses: sight, hearing, touch, taste and scent” for 2009 is 70.

2.4 Speech

Speech is a unique human ability and the children learn it by hearing, imitating and practice. Therefore, from the very beginning you should tell them what you are doing. Read to them regularly. Remember the significance of positive stimulation. Make everything a fun speech game by introducing a subject, then transforming it to a game of questions. Songs for children are great, only because they rhyme, and rhymes are easy to remember. Color books and reading are important for every child from the beginning [6]. The quantified value of the variable “Speech” for 2009 is 70.

2.5 Standard

The constant growth of the population of the Planet Earth enables higher education of parents. That is how we assume how parents affect development of
intelligence with their children and increase of information memorizing capacity. With growth in standard, hypothesis such as healthy food affecting physical condition and brain potential by maintaining the body and the spirit sound. Parents need to make the growth of standard useful in order to offer their children warmth and tenderness, because that is very important for the brain development [17]. Children need cordial people who will present the world to them, they need stories and laughter. They need books matched to their own experience, books where language and illustrations will activate certain emotions. If they can taste, scent and touch an apple, they will most certainly learn how to pronounce that word [6]. Small children need to be played with. It is important to transform game into an experience of learning and make sure that learning is fun. Children learn from concrete and active experience. During playing they enjoy pushing, dragging, pinching and battering nevertheless those are toys or something else [15]. The quantified value of the variable “Standard” for 2009 is 50.

2.6 Physical activity
Physical activity very effectively traces the paths into the brain. Swinging a child stimulates the nervous system very tightly connected with the cerebellum and a child’s inner hearing mechanism which also plays an important role in balance and coordination development. Scientists say that one is of the brain parts which start to function early in the womb already in the 16\textsuperscript{th} week of pregnancy. Tests proved that 15 minutes of caressing per day will help to a preborn baby develop its ability of coordination and learning. For example, it seems that most parents instinctively recognize that their children like to be held tightly by their hands and spined around. Research showed those activities result in significant development of the brain. The final result is the improvement in competence and self-confidence, increased attention, faster reactions and capability to face complex learning activities. By using similar techniques, the scientists realized that spinning is ideal for many children, especially those with serious learning difficulties. Most learning problems is connected with lack of balance and problems with reflexes. Therefore, those exercises need to be practiced from the first day [10]. The quantified value of the variable “Physical activity” for 2009 is 71.

2.7 Addiction
Drugs are most dangerous for the fetus during the first trimester of pregnancy when the heart, brain, limbs and features are formed. Every cigarette a mother has equals two for the baby because smoking causes lack of oxygen in the fetus’ brain, and oxygen is necessary for the creation of cells. If a pregnant woman smokes 15 to 20 cigarettes a day, she doubles the chance of miscarriage. Consuming alcohol during pregnancy or during breastfeeding can also damage the brain in development. The consequences can be: diminished brain size, bad movement coordination, deformed facial features and hyperactivity. It is very important for the future parents to realize that alcohol is a very important drug which can create addiction with children during pregnancy. Alcohol attacks the whole body and the child’s cerebral system. During pregnancy it is not recommended to drink too much coffee and tea because of high level of caffeine. If a woman consumes more than 300 mg of caffeine a day, the ability to conceive can be reduced. That is about 3 cups of coffee, 6 cups of tea or more than 7 non-alcoholic drinks with gas a day [3]. The quantified value of the variable “Addiction” for 2009 is 55.

2.8 Informatization
In the information era, new technology will bring human civilization nearer to the world where there will be almost no need for physical work. Even if nothing else affected the changes in learning styles and memorizing, the informatization would do enough [4]. The quantified value of the variable “Informatization” for 2009 is 62.

2.9. Globalization
Globalization is the reason why in the EU till 2010 only 10\% of unqualified workers will be offered a job. That is significantly less compared to 1976 when 35\% were needed. It is not only about unemployment. Unemployed young men are more likely to do criminal acts and avoid parenting responsibilities. Adolescents are most naive and violent. Adolescents younger than 18 are responsible for one fourth of crimes regarding violence in the USA. The numbers are similar for most developed countries in the world [10]. The globalization influences the movement of capital to states with cheap labour force, because the profits in those countries are bigger. The result of that capital movement is increase of unemployment rate in developed Euro-Atlantic zone countries, as well as the increase of other related social problems. Because of that their citizens need to compensate advantages of far east countries in cheap labour force by better education. The quantified value of the variable “Globalization” for 2009 is 32.

3. Quantification of the global model of intelligence and memorizing of information from conception until a child starts to walk
Evaluation of the model variables, synergic effect of the following scientific aspects will be taken into account: scientific theoretical aspects of some model variables;

The starting point is the statement that the development of intelligence and information memorizing are affected by “n” interdependent elements. The value of a certain variable model is marked as $y_{it}$, of the $i$-th variable in the $t$ and $t-1$ period. The increase of the input variable $i$ value, of the global intelligence and information memorizing model until a child starts to walk, for the period from 2009 till 2020 is defined by relation (1):

$$
\Delta y_{it} = y_{it} - y_{it-1}
$$

Indirect increase rate of the variable $i$ in relation with variable $j$ is defined as a relation of the input increase of the variable $i$ of the global intelligence and information memorizing model until a child starts to walk, for the period from 2009 till 2020.

$$
R_{ijt} = \frac{\Delta y_{jt}}{y_{jt}}, \quad \text{where } i, j = 1, \ldots, n
$$

The growth vector of model variables is:

$$
\Delta y_{it} = (\Delta y_{i1}, \ldots, \Delta y_{im})
$$

The vector of reciprocal values of the model variables is defined by the relation (6):

$$
\left(\frac{1}{y_{i1}}, \ldots, \frac{1}{y_{in}}\right)
$$

where $i, j = 1, \ldots, n, a \quad y_{ijt-1} \neq 0$

The growth matrix of the global model of intelligence and memorizing of information from conception until a child starts to walk, for the period from 2009 until 2020 defines the external growth vector of model variables coefficients and of the vector of reciprocal values (7):

$$
R_{ijt} = \Delta y_{it} \left(\frac{1}{y_{i1}}, \ldots, \frac{1}{y_{in}}\right)
$$

If only direct growth rates are analysed, then the increase rate of one variable is expressed independently of the growth of other variables. When indirect growth rates are analysed, i.e. the growth of variable $i$ to the respect of variable $j$ ($i, j = 1, \ldots, n$), it is possible to define their growth structure and express all relationships through the growth matrix in whole the system. Based on the formerly elaborated basic research as well as on the forecast variable growth estimate (on the scale 1 to 100) variable values of the model are quantified (Table 1.)

<table>
<thead>
<tr>
<th>Variable values</th>
<th>Inputs $y_{it}$</th>
<th>Incr.</th>
<th>2009</th>
<th>2015</th>
<th>2020</th>
<th>2009/ 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. A mother’s health</td>
<td>51</td>
<td>56</td>
<td>60</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Nutrition;</td>
<td>70</td>
<td>71</td>
<td>71</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Strengthening of the senses</td>
<td>70</td>
<td>72</td>
<td>74</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Speech</td>
<td>70</td>
<td>72</td>
<td>73</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Standard</td>
<td>50</td>
<td>52</td>
<td>55</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Physical activity</td>
<td>71</td>
<td>74</td>
<td>76</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Addiction</td>
<td>55</td>
<td>57</td>
<td>60</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Informatization</td>
<td>62</td>
<td>72</td>
<td>80</td>
<td>18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Globalization</td>
<td>32</td>
<td>42</td>
<td>60</td>
<td>28</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1 Variable values of the model
3.1 Growth matrix of the model

In the next sections the growth matrix of the global model of intelligence and memorizing of information from conception until a child starts to walk for the period from 2009 until 2020 is presented.

The model growth vector is: $$\Delta y_{2020} = \begin{bmatrix} 9 \\ 1 \\ 4 \\ 3 \\ 5 \\ 5 \\ 5 \\ 18 \\ 28 \end{bmatrix}$$

Reciprocal values vector of the model is: $$y_{2020} = \begin{bmatrix} 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \end{bmatrix}$$

External vector product $$\Delta y_{2020} \cdot \frac{1}{y_{2020}}$$ determines growth matrix of the model to the respect of existing values. The growth matrix of the global model is presented in Table 2.

### Table 2 The growth matrix of the model

<table>
<thead>
<tr>
<th>var. (u%)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>15.0</td>
<td>12.7</td>
<td>18.2</td>
<td>12.3</td>
<td>16.4</td>
<td>11.8</td>
<td>15.0</td>
<td>11.3</td>
<td>15.0</td>
</tr>
<tr>
<td>2.</td>
<td>1.7</td>
<td>1.4</td>
<td>1.4</td>
<td>1.2</td>
<td>1.3</td>
<td>1.7</td>
<td>1.3</td>
<td>1.7</td>
<td>1.7</td>
</tr>
<tr>
<td>3.</td>
<td>6.7</td>
<td>5.6</td>
<td>5.4</td>
<td>5.5</td>
<td>7.3</td>
<td>5.3</td>
<td>6.7</td>
<td>5.3</td>
<td>6.7</td>
</tr>
<tr>
<td>4.</td>
<td>5.0</td>
<td>4.2</td>
<td>4.1</td>
<td>4.1</td>
<td>5.5</td>
<td>3.9</td>
<td>5.0</td>
<td>3.8</td>
<td>5.0</td>
</tr>
<tr>
<td>5.</td>
<td>8.3</td>
<td>7.0</td>
<td>6.8</td>
<td>6.8</td>
<td>9.1</td>
<td>6.6</td>
<td>8.3</td>
<td>6.3</td>
<td>8.3</td>
</tr>
<tr>
<td>6.</td>
<td>8.3</td>
<td>7.0</td>
<td>6.8</td>
<td>6.8</td>
<td>9.1</td>
<td>6.6</td>
<td>8.3</td>
<td>6.3</td>
<td>8.3</td>
</tr>
<tr>
<td>7.</td>
<td>8.3</td>
<td>7.0</td>
<td>6.8</td>
<td>6.8</td>
<td>9.1</td>
<td>6.6</td>
<td>8.3</td>
<td>6.3</td>
<td>8.3</td>
</tr>
<tr>
<td>8.</td>
<td>30.0</td>
<td>25.4</td>
<td>24.3</td>
<td>24.7</td>
<td>32.7</td>
<td>23.7</td>
<td>30.0</td>
<td>22.5</td>
<td>30.0</td>
</tr>
<tr>
<td>9.</td>
<td>46.7</td>
<td>39.4</td>
<td>37.8</td>
<td>38.4</td>
<td>50.9</td>
<td>36.8</td>
<td>46.7</td>
<td>35.0</td>
<td>46.7</td>
</tr>
</tbody>
</table>

3.2 Direct growth rates of the variables

It is obvious that the highest direct growth rates of the model will have following variables: globalization variable (46.7%), informatization (22.5%), A mother’s health before pregnancy, during pregnancy and while breast-feeding (15%), standard (9.1%), addictions (8.3%), physical activities (6.6%), senses of sight, hearing, touch, taste and scent (5.4%), and speech (4.1%), for all children in the life period before they start to walk, for the period before year 2020. It clearly follows that the quantification of selected variables of the global model of speed and easy learning is correct. It follows graphical model presentation with the diagram of direct and indirect growth rates (graph 2).

### Graph 1 Direct growth rate of the model

Source: Table 3.

### Graph 2 Direct and indirect model growth rates

3.3 Indirect growth rates

The set model can also forecast indirect growth rates between particular variables of the global model of intelligence and memorizing of information from conception until a child starts to walk. It should be stressed that there exist two different types of indirect growth rates, as shown in the graph 2: Indirect growth rates of particular variables, for example: variable 1, under simultaneous influence of all other variables (horizontally); Indirect growth rates of other variables, under influence of growth of only some particular variables, for example: of variable 1 (vertically).

3.3.1 Indirect growth rates of particular variables

It is obvious that the greatest influence on variable "A mother’s health before pregnancy, during pregnancy and while breast-feeding" have variables of strengthening of the senses: sight, hearing, touch, taste and scent (18.2%), standard (16.4%), and globalization (15.0%).

In the similar way it is possible to elaborate the indirect growth rate relations for any particular variable of the model of intelligence and information memorizing until a child start to walk.
Graph 3 Indirect growth rates of the model variable „A mother’s health” to the respect of other variables

4 Conclusion
For the first time a “Global intelligence and information memorizing model until a child starts to walk, for the period from 2009 until 2020” has been created. A scientific research proceeded: how to enable a person to by the help of their own intelligence and information memorizing capability ensure material preconditions and personal luck in the globalized world.

The basic scientific hypothesis of this paper, “Scientific findings on making the brain capable of improving intelligence and information memorizing until a child starts to walk, in order to gain BAs, MAs or PhDs, what should enable their personal improvement as well as of all the people on the Planet Earth”, was proved by the help of direct and indirect increase rates of the model. Mother’s health and her nutrition (before pregnancy, during pregnancy and while breastfeeding) is very important for the capability of children’s learning.

Strengthening of the senses (sight, hearing, taste and scent) in the period before a child starts to walk sets the ground for intelligence and information memorizing capability when a child becomes an adult. Children must learn to speak by hearing, imitating and practicing. Improvement in the population standard should result in better life conditions in families, and this would create preconditions for strengthening of intelligence and information memorizing until a child starts to walk. Parents’ addiction, such as drugs, alcohol, cigarettes etc. results in socially problematic children, and they often have learning disabilities. Informatization helps strengthen human intelligence and information memorizing, and globalization affects capital transactions to countries with cheap man power, which causes unemployment increase in western developed countries, and employment increase in countries with cheap man power. The highest direct increase rates of the global (information) model has the globalization (46.7%), which will together with ever growing informatization (22.5%) affect mothers’ health before pregnancy, during pregnancy and while breastfeeding (15%) in the entire world. Furthermore, there is growth in the population standard (9.1%), mothers’ addictions (8.3%) and physical activity with small children (6.6). Globally, strengthening of sight, hearing, touch, taste and scent will occur (5.4%) and speech improvement (4.1%) and all regarding children before they start to walk until 2020. These direct increase rates will globally affect a speeding development of states with big population such as China, India, Brazil, Mexico, etc.

References: