THE FREQUENCY OF PERSISTENT BABY REFLEXES WHICH INFLUENCE LEARNING SKILLS AMONG CHILDREN AGED 4 TO 8

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Abstract

This study forms part of my PhD research. For my thesis I am examining the connection between learning skills and persistent baby reflexes, and how movement exercises can improve children’s cognitive skills.

“The method I research is characterized by the fact that it includes the integration of all of the infant reflexes that have an impact on certain learning abilities. It considers the rate of immaturity, the load capacity resulting from the age and the physical condition of the child. In terms of didactic and training theory aspects, the program is based on the principle of gradualism and adaptivity. It is fundamental that it follows the major stages of the ontogenesis of the child.” (Sarlós, 2018)

Many children suffer from various problems. Some underperform in multiple school subjects, below the level expected of them at their level of intelligence. Some are “clumsy”, bite their nails, experience anxiety, keep rocking on their chairs, or occasionally still wet their beds around the age of 6. There are of course other symptoms besides those mentioned above that occur in children participating in state education, making not just school but also their everyday life more difficult.

My thesis study examines what percentage of baby reflexes are persistent among 4- to 8-year-old children. The study includes 865 children (441 boys, 424 girls) aged between 4 and 8 years who attend kindergarten or primary school. They are from all over Hungary including the capital city. The children were divided into three groups: research, placebo and control group.

The tests used in the study check seven baby reflexes, the state of vestibular system, seriality, multichannel attention and short-term memory.

The reflexes tested are: Asymmetrical Tonic Neck Reflex, Moro reflex, Symmetrical Tonic Neck Reflex, palmar-sucking reflex, Galant reflex, Tonic Labyrinth Reflex (forward), Tonic Labyrinth Reflex (backward). These reflexes affect learning skills.

In this presentation, I will present the result of the input test which will be compared with the test results of the children after 8-month long sensorimotor training.

Keywords: sensorimotor development, persistent primitive reflexes, learning abilities, learning difficulties.

1 INTRODUCTION

The number of children with special educational needs (SEN) and struggling with integrational, learning and behaviour difficulties (LBD) has been growing in Hungary year by year.

According to information published by the Ministry of Human Capacities in November 2017, the number of SEN learners participating in state education in Hungary in the 2001/2002 academic year was 58,748. This number increased to 85,730 in the 2016/2017 academic year. It is important to be noted that mental development disorder was detected in 8,690 children in 2001, and the number of such problems increased to 42,242 by 2016.

While the number of children and learners struggling with integrational, learning and behavioral difficulties (LBD) in the 2001/2002 academic year was 62,703, their number reached 86,363 by the 2016/2017 academic year.

Although the number of learners participating in state education in 2001 was 944,000, in 2017 this number was only 741,500.

Therefore, the proportion of LBD and SEN learners grew from 12.8% to 23.2% between 2001 and 2017. (Sarlós, 2018)
The above data is worth some consideration. Among other reasons, because they only reflect the number of learners whose problems were diagnosed. No mention is made of children who underperform in various subjects, below the level expected of them at their level of intelligence, who are “clumsy”, who bite their nails, who are experiencing anxiety, keep swinging on their chairs or still occasionally wet their bed around the age of 6. (Zsoldos, 1999) There are of course other symptoms besides the ones mentioned above that occur in children participating in state education, making not just school, but also their everyday life more difficult.

When the problems surface in the academic performance, we usually speak of learning difficulties. Often no “name” is given to the phenomenon, it only appears as a low grade on the learner’s assessment, or maybe in the low assessment of their diligence or behavior. Children, willingly or unwillingly, experience these events and assessment as failure. Experiencing a series of failures will lead to turning away from learning and school itself. There are those who are only “physically” present in the class, with their minds on other things, but many drop out of education.

According to an announcement of the Office of the National Assembly published in 2017 “The proportion of early school-leavers, considering the average rate of the EU Member States, decreased continually and drastically between 2008 and 2016. In Hungary, the data relating to the period between the two dates shows an increase from 11.7% to 12.5%.”

Looking at the causes, it is not difficult to realize how complex the problem is. The parental example, the socio-cultural background, the financial situation, the capacities, skills and abilities of the child, the life that the children lead until they start going to school can all be influencing factors. Immaturity of the nervous system is one of the many potential reasons. In this case it is not related to a pathological process but the fact that the nervous system of the child does not reach the level of their biological age when they are admitted to school. (Sarlós, 2018)

Numerous factors may influence the development rate of the nervous system. Some of these affect the child in utero (e.g. an ailment of the mother, the effects of continuous stress, medicine, chemicals). Problems during childbirth may cause problems, such as too fast or too prolonged childbirth, when the umbilical cord is wrapped around the neck, or caesarean delivery. (Katona, 2001)

Jane Ayres summed it up as: “the disorders of sensory integration usually do not result from how the child was brought up, but much rather from circumstances we are still unable to grasp completely. For some children, the cause of the problems can be malnutrition, chemicals in the food, in the air, difficult birth or many other factors. Since we are not able to look into the brain, we are not in the position to trace the identified problem back to the point where it first occurred.” (Ayres, 2005)

Among the ones defined above, some of the factors causing problems exert their influence on the child after birth. It would be difficult to list every circumstance that might affect the rate of the maturation of the nervous system. There are some inhibiting factors, though, that are definitely worth mentioning. These are stimulus-deprived or stimulus overloaded environments, artificial food additives, certain infectious diseases, the condition induced by high fever, or the side effects of certain medications.

Attempting to find the root cause is of course very important, but for the individual, who is already experiencing the symptoms of immaturity of the nervous system, I believe therapy, which is the maturing of the nervous system through sensorimotor exercises, is much more important.

The proper level of maturity of the nervous system is not only important from the aspect of developmental neurology. Let us consider that the child must have the skills and abilities that enable a smooth start at school right at the time they are admitted. Without these, the chance of failing in school or having integrational and behavioral problems and learning disorders increases. (Reményi, Schafhagen, Gereben, 2014)

Ayres considered sensorimotor integration the basis of cognitive development. In her theory, sensorimotor integration happens on four levels. On the first level, the information acquired by tactile perception are linked with each other. The tactile relationship of the mother and the child is at the center, which includes stroking, breast-feeding, clearing up. The emphasis is on touching as a pleasant experience. The second is the vestibular and proprioceptive perception of the child, the processing of stimuli. This enables the creation of coordinated eye movement, the setting of muscle tone, the execution of movements against the force of gravitation, safe movement. The third level of sensory integration is followed by the perception, processing and integration of acoustic and visual stimuli. This results in, on the one hand, the understanding of speech, and the production of speech. On the other hand, this results in the perception of visual stimuli, the creation of hand-eye coordination, during which the child becomes the master of their own movement. The fourth level consists of complex processing
sequences. These are fundamentally the basic learning abilities: reading, writing, calculation, movement, attention and behavior control. (Ayres, 1979)

In 1963, a book by Mary R. Fiorentino was published titled “Reflex Testing Methods for Evaluating C.N.S. Development”. The author published her revolutionary work with the purpose of enabling us to interpret physical, mental, visual and auditory perceptional, psycho-social problems in the context of neurological dysfunctions.

Peter Blythe and Sally Goddard Blythe also found connections between persistent infant reflexes and learning difficulties, behaviour and integrational disorder.

Bonnie Brandes emphasizes the relation between primitive reflexes and ADHD, autism spectrum disorder, cerebral palsy and dyslexia. “Unintegrated reflexes can place a constant stress on the nervous system. The brain must work harder to accomplish tasks that have not become automatic due to retained reflexes. This, in turn, stress the brain resulting in the shutting down of the non-dominant side, and communication via the corpus callosum is less efficient. Primitive reflexes, which begin to develop in utero, build the neurological connections that dictate our potential, our abilities, and our neurological health.” (Brandes, 2015)

2 THE METHOD OF THE RESEARCH

The method I research is characterized by the fact that it includes the integration of all of the infant reflexes that have an impact on certain learning abilities. It considers the rate of immaturity, the load capacity resulting from the age and the physical condition of the child. In terms of didactic and training theory aspects, the program is based on the principle of gradualism and adaptivity. It is fundamental that it follows the major stages of the ontogenesis of the child. (Sarlós, 2018)

This study aims to show how many percentages of the children aged 4-8 have retained primitive reflexes. At the same time, we will present the areas where these reflexes can cause problems in terms of learning processes and behaviour. This measurement is the input test of my PhD study.

We examined 633 healthy children, aged 4-8. The ratio of boys and girls was 50%-50%. The test had four parts. Beside the condition of primitive reflexes, we also tested the maturity of vestibular system and body-balance, the sensorimotor coordination and the multi-channel attention.

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The reflex profile examination included Symmetrical Tonic Neck Reflex, Asymmetrical Tonic Neck Reflex, Moro reflex, Palmar and sucking reflex, Tonic Labyrinth (forward), Tonic Labyrinth (backward) and Trunk Incurvation (Galant) reflex.

During the examination we used the following bibliography: "Unlock Brilliance Learning Disabilities 2018 Prof.", “Reflex Testing Methods for Evaluating C.N.S. Development” (Fiorentino,1963) and “Symphony of Reflexes” (Brandes, 2015). Furthermore we used the balance exercises, gymnastic exercises, balls exercises and rhythm exercises measurement tools which are in the National Curricula per age-group.

3 RESULTS

Persistent Moro reflex was identifiable in 61.6 % of the children. During the biological maturity it shows improvement. The children aged 4 had 75% persistent Moro-reflex, and at age 8 had 49.1 %. This reflex appears from week 9-12 after conception. It continually develops until birth. The reflex itself is a series of quick movements which is activated under the influence of sudden stimuli. The activation of the reflex leads to the abduction of the arms simultaneously with breath intake. This is followed by the adduction of the arms that facilitate exhaling.

The reflex is inhibited around the months 2-4. Afterwards, the Strauss reflex will take its place.

If the aforementioned reflex remains after the age of months 2-4, the child may continually be in an escalated frightened state that results in intensified irritability to sudden change of location, light, sound and other stimuli.

Depending on the type of personality (introvert - extrovert), the symptoms of a persistent Moro reflex may appear differently in children. In the first case, they will become shy and reserved and may have problems with integration. They will not be able to give or accept or show tenderness. In the second case the child will be aggressive, unable to integrate, irritable and intolerant. In both cases the manipulation of their environment is typical. (Blythe, 2015:3)

Persistent Moro reflex in the long term often leads to motor skills disorders, which can especially be detected in ball-related movements.

These children do not like learning new tasks involving movement. They often experience travel sickness, headache, balance disturbance or a disorder of motion coordination.

In many cases they have problems with visual senses, visual perception, and coordination of eye movements. They may find it difficult to separate shape and background and to process the part or the whole. Their pupillary reaction is weaker, they are sensitive to light, they quickly become tired in fluorescent, flashing light. In terms of hearing, they are also typically more sensitive. Their sound discrimination is weak; therefore, they may find it difficult to filter out background noise. They often suffer from ailments of the ear, nose and throat, and various allergies are typical.

They do not like surprises, their adaptability is weak and they often suffer from allergic diseases. Their carbon-dioxide reflex is underdeveloped. Besides the above mentioned symptoms, they might experience secondary psychological symptoms, too. These are primarily the angst and continual worry that were mentioned before. Mood swings, increased muscle tone, the acceptance of criticism are typical of them (since these children find it difficult to accept changes). They experience a cyclic alternation of fatigue, dejectedness and hyperactivity. They often struggle with self-assessment, they have low self-esteem. For strengthen their position in a specific group, they attempt to manipulate events. (Blythe, 2015)

The palmar-sucking reflex was detectable in 67.9 % of the children. The improvement of this reflex was interesting, because from age 4 to age 7 it changes for better, from 86.5% to 49.2% but the result of age 8 pupils was 64.9 %. When the palms are touched the reflex is activated and the fingers close. At birth, the reflex is fully developed and is very active in the first 12 weeks. Sucking may initiate the grasping reflex. (Babkin reaction). The existence of the reflex over time may have an adverse impact on the development of fine muscle coordination, speech and sound formation. If the grasping reflex persists, the thumb does not turn to face the fingers. This causes serious difficulties for the fine motor movements carried out with the fingers. Later on, the “clip” grasp will inhibit holding the pencil. The Babkin reaction frequently results in speech disorder and problems with the movement of the muscles around the mouth. This, among other things, inhibits sound formation. In the case of these children, it can be observed that the mouth and the tongue move while they are manipulating with their fingers, are drawing or writing. (Blythe, 2015)
Asymmetrical Tonic Neck Reflex was positive in 39.7% of the children examined. When ATNR is activated, if we turn the head of the child to one side, then the arms and legs stretch out on the side toward which it was turned, and the ones on the opposite side bend. The reflex appears in-utero, and must be integrated by the 6th month after birth. ATNR facilitates movement in the uterus, whereby the fetus achieves different positions, and with this the reflex contributes to the maturation of the vestibular organ. After birth, the reflex ensures that the infant turns its head when lying on its belly in order to be able to breathe.

ATNR helps both the child and the mother during childbirth, and is strengthened during birth. If the reflex is still persistent by the sixth month after birth, it may lead to problems in achieving and developing eye-hand coordination. They may easily lose balance when turning their head in either direction. Persistent ATNR may lead to homolateral movements instead of contralateral movements. It may lead to problems when the arms need to cross the central line of the body. This may cause problems when drawing and writing. The same is true for eye-movement. When the eyesight crosses the central line of the body, children might hesitate which manifests itself as a stoppage while reading. Cross-dominance can also be a typical symptom.

Remaining ATNR causes difficulties to many children in learning to write, and subsequently in every task that requires writing. Since the energy is “used up” for the process of the writing, composing and expressing thoughts in writing will falter.

Problems may appear in visual perception. If ATNR persists, the development of fine motor skills may be inhibited. Therefore, every activity for which fine motor skills are required will be cumbersome and fragmented. (Niklasson, 2013)

The Galant reflex was identifiable in 40.1% of the children. This reflex can be activated by stimulating the skin of a child lying on its belly to the left or to the right of the spinal cord. As a result of the stimulus, the hip bends backwards and the leg on the same side stretches out. The child “evades” the stimulus. The Galant reflex is fully developed and functions at birth. It has an active role in the process of childbirth. It is typically inhibited between the third and ninth months of life.

If it persists after the ninth month, one of its most typical symptoms is that the child cannot sit in one place. She fiddles and moves about. The reflex indirectly affects short term memory and the ability to concentrate. It may inhibit the development of the segmental rolling reflex and the Lizard reflex. A persistent Galant reflex often results in wetting the bed. In many cases it can be detected in those with Asperger syndrome. (Blythe, 2015)

The Tonic Labyrinthine Reflex (TLR) consists of the Labyrinthine Reflex Forward and Labyrinthine Reflex Backward. The TLRF was persistent in 42.8% of children, the TLRB in 52.9%. It is the baby's first reaction to gravitational force. Together they are present and important to the development of correct head alignment of the head. TLR is activated by movement of the head, which stimulates the labyrinths in the inner ear that give use our sense of balance. The TLR is the baby’s means of learning about gravity and helps prepare an infant for head management during activities such as rolling over, crawling, standing and walking.

Persistent TLR reflexes cause a multitude of problems. They affect the balance, the muscle-tone and behaviour. Weak muscle-tone (hypotonicity) is because of the TLR Forward, while the TLR Backward causes the tense muscle tone (hypertonicity).

Characteristics of an unintegrated Tonic Labyrinthine Reflex are balance and coordination problems, poor muscle tone, tendency to walk on toes, motion sickness, “w” leg sitting position, difficulty following directional or movement instructions, visual, speech, auditory difficulties. Difficulties are often with concentration and comprehensions. (Brandes, 2015)

Symmetrical Tonic Neck Reflex was present in 36.9% of the children. STNR appears between the sixth and ninth months. Depending on when it appears, it is inhibited between the ninth and eleventh months. It is characteristic of the reflex that when the child is on all fours, he/she bends his/her head down, the arms bend and the legs stretch out. Bending the head backward results in the arms stretching out and the legs bending. (Brandes, 2015)
CONCLUSION

Persisting reflex leads to incorrect posture. The child leans over the desk when learning. Their walking is uncoordinated. They eat clumsily and their eye-hand coordination is very weak. They have problems with binocular vision, and it is hard for them to focus when switching from looking at more distant objects to nearby ones (or vice versa). They are slow in copying exercises. They find it hard to sit for a long time because sitting is unpleasant for them. Therefore, they find it hard to pay attention during tasks performed while sitting. (Blythe, 2015)

Children with average or above-average intelligence levels may be able to use their cognitive skills to compensate for sensorimotor immaturity for one or two years after starting school. However, when they need to read and analyze longer texts or perform more complicated arithmetic tasks, they will no longer be able to keep up and learning difficulties will surface. (Niklasson, 2013)

The above measurement results form the foundation of my PhD research, in which I seek to find the answer to whether (and if yes, to what extent) the developing effect of the Complex Sensorimotor Training I compiled affects the maturation of the nervous system and the fundamental learning abilities of the child.

I intend to examine the effects of the training primarily in Kindergarten groups and primary school groups (aged 4-8). The children will perform the exercises 4-5 times a week for a period of 8 months. One session lasts 15-20 minutes.

If my hypothesis, i.e. the fact that the learning abilities of children are influenced by the maturity of their nervous system and that the maturation process of the nervous system can be aided through sensorimotor exercises, is proven, then Complex Sensorimotor Training can contribute to laying down the foundations for certain learning abilities. It may reduce integrational and behavioral problems, it can determine the way children relate to learning, with an influence that lasts a lifetime.

Academic success in school affects the way children find their place at work and in society as adults.

REFERENCES


[14] Unlock Brilliance Learning Disabilities 2018 Prof. (Measurement tool)