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THE PROJECT OF PROMOTING THE SENSORY INTEGRATION THERAPY AMONG STUDENTS OF PSYCHOLOGY AND PEDAGOGY

This work is comprised within issues of contemporary cognitive science. Among present-day sciences concerning the brain, there is a Sensory Integration Theory and consequent concept of the Sensory Integration Therapy. Sensory processing disorders result in abnormalities in the cognitive, emotional, and motor functioning. If the Sensory Integration does not work, the Sensory Integration Therapy (SI) may be launched. The use of the therapy can help to improve life quality of people visually- and hearing-impaired, with cerebral palsy, intellectual disabilities, ADHD, Down syndrome, infantile autism, Asperger syndrome, FAS, speech disorders, and emotional and behavioral disorders. The concept of the Sensory Integration Therapy, unfortunately, is not widely known, even by psychologists, educators and physicians. The idea of spreading the message about the SI among students of Psychology and Pedagogy has become a reason for choosing the topic of this project.

Key words: *psychology, pedagogy, promoting, the Sensory Integration Therapy, student*

Дана робота входить в рамки проблем сучасної когнітивістики. Однією з актуальних наук про мозок є теорія сенсорної інтеграції. Наслідком порушення процесів сенсорної обробки є відхилення в когнітивних, емоційних та моторних функціях. Якщо сенсорна інтеграція діє неефективно, то можна ввести терапію Сенсорної Інтеграції (СІ). Застосування терапії може допомогти покращити якість життя людям з вадами зору, вадами слуху, дитячим церебральним паралічем, інтелектуальною неповноцінністю, синдромом дефіциту уваги і гіперактивності, синдромом

Дауна, дитячим аутизмом, синдромом Аспергера, алкогольним синдромом плоду, мовними розладами, дислексією, емоційними та поведінковими розладами. Концепція терапії сенсорної інтеграції, на жаль, не є широко відомою, навіть серед психологів, педагогів і лікарів. Ідея розповсюдження інформації про сенсорну інтеграцію студентами психології і педагогіки стала передумовою вибору теми даного проекту.

Ключові слова: психологія, педагогіка, пропагування, теорія сенсорної інтеграції, студент.

Данная работа входит в рамки проблем современной когнитивистики. Одной из актуальных наук о мозге является теория сенсорной интеграции. Следствием нарушения процессов сенсорной обработки есть отклонения в когнитивных, эмоциональных и моторных функциях. Если сенсорная интеграция действует неэффективно, то можно ввести терапию сенсорной интеграции (СИ). Применение терапии может помочь улучшить качество жизни людям с нарушениями зрения, нарушениями слуха, детским церебральным параличом, интеллектуальной неполноценностью, синдромом дефицита внимания и гиперактивности, синдромом Дауна, детским аутизмом, синдромом Аспергера, алкогольным синдромом плода, речевыми расстройствами, дислексией, эмоциональными и поведенческими расстройствами. Концепция терапии сенсорной интеграции, к сожалению, не является широко известной, даже среди психологов, педагогов и врачей. Идея распространения информации о сенсорной интеграции студентами психологии и педагогике стала предпосылкой выбора темы проекта.

Ключевые слова: психология, педагогика, популяризация, теория сенсорной интеграции, студент.

Introduction.

This work is comprised with-in issues of contemporary cognitive science. The cognitive science is a study of a phenomenon of mind, including the brain and cognitive processes, such as thinking, perception, and consciousness (Z. Chlewiński, 2007; D. Freeman, J. Freeman, 2011). It is a multi-disciplinary science (A. Klawiter, 2006), which is created by researchers of at least a dozen or so research disciplines: philosophy of mind, of language, and of

perception; cognitive psychology; child's development psychology; artificial intelligence; computer science; mathematics; linguistics; logic; neuroscience, or neurology, neurobiology, neurophysiology, neuropsychology, biochemistry, and anthropology. The cognitive science was established in the second half of the 20th century, and so far has been developing very rapidly (M. Prentka, 2014).

The cognitive science defines mind as a cognitive system of receiving and processing of information (E. Nęcka, J.

Orzechowski, B. Szymura, 2006). The cognitive science has passed through its stages of understanding of mind's actions nature (A. Klawiter, 2008, 2009). In the first model, a metaphor of a computer was used to understand the essence of the mind. In the second model, the mind is a self-improving, connectionistic neural network. The modern construct of the mind identifies it with the brain (M. S. Gazzaniga, 2013). Many scientists believe that the cognitive science dominates among modern sciences discovering the truth about *homo sapiens* (D. Casacuberta, 2007). The researchers aim at creating a consistent, universal theory of the mind (J. R. Searle, 2010). Exploring the mind is like exploring a microcosm that the human brain is compared to (D. Eagleman, 2012).

An already achieved knowledge helps to gradually understand how the human mind works. It also has a great practical use, e.g. in constructing computers. Neurosciences are a substantial contribution in the field of medicine – namely, in the treatment of the nervous system's disorders (A. Kobb, 2010). With the discoveries of modern neurologists and neurosurgeons, the regeneration of damaged axons in the spinal cord using olfactory glial cells becomes possible, being a spectacular example of achievements and a high level of the neurosciences' development.

Among present-day sciences concerning the brain, there is a Sensory Integration Theory and consequent concept of the Sensory Integration Therapy (V. F. Mass, 2007), which is a matter of the discussed research. The Sensory Integration is a natural, neuropsychological brain process of organizing the information received through senses (sense of touch, hearing, sight, smell; proprioceptive and vestibular senses) (B. Sadowski, 2009). The function of the Sensory Integration is

an adaptation to the situation by an adequate response. The brain collects sensory information, recognizes it, segregates, interprets, then integrates with each other and with knowledge possessed by a person. The Sensory Integration is a foundation for the formation of correct reactions in a complete response to pieces of information that come through the senses. This is a process of recording, transmission, enhancement or inhibition, identifying, and combining data in a constantly changing model of reality. This is also a model that is continually used to respond to challenges from the environment (Z. Przyrowski, 2012).

Sensory processing disorders result in abnormalities in the cognitive, emotional, and motor functioning (L. Grzeziuk, 2006a, 2006b; G. Small, G. Vorgan, 2011). Considered to be the originator of the concept of abnormal sensory integration therapy, dr A. Jean Ayres (2005) noted that the Sensory Integration dysfunctions affect postural reactions, muscle tension, motion planning, speech development, behavior, emotions, and cognitive functions. Empirical studies alarmingly point that these disorders, with various degrees of intensity, reach 20% of children (J. Koomar, C. Kranowitz, S. Szklut, L. Balzer-Martin, E. Haber, D. I. Sava, 2014).

If the Sensory Integration does not work, the Sensory Integration Therapy (SI) (V. F. Mass, 2005) may be launched. The task of the SI Therapy is to provide a controlled amount of sensory, particularly vestibular, proprioceptive, and tactile stimuli in a way that a child could spontaneously formulate adaptative responses improving the integration of these stimuli. During the therapy, relationships between sensory and motor behavior shape and improve synaptic connections in the central nervous system. A proper synaptic organization of the central nervous system determines

the proper programming and processing of sensory information in the subsequent reactions of a person with the environment (Z. Przyrowski, 2012).

The use of the therapy can help to improve life quality of people visually- and hearing-impaired, with cerebral palsy, intellectual disabilities, attention-deficit hyperactivity disorder (ADHD), Down syndrome, infantile autism, Asperger syndrome, Fetal Alcohol Syndrome (FAS), speech disorders, dyslexia, dysgraphia, dysortography, dyscalculia, and emotional and behavioral disorders (H. I. Kaplan, B. J. Sadock, V. A. Sadock, 2004; R. C. Carson, J. N. Butcher, S. Mineka, 2006). Due to the fact that the sensory processing deficits do not disappear automatically with age, it is of great importance to mention that the SI therapy can include both children and adults.

The concept of the Sensory Integration Therapy, unfortunately, is not widely known, even by psychologists, educators and physicians (J. Koomar, C. Kranowitz, S. Szklut, L. Balzer-Martin, E. Haber, D. I. Sava, 2014). The conducted pilot research, i.e. interviews with students of Kujawy and Pomorze University in Bydgoszcz, showed a scant awareness of the problems connected with treating disorders of the sensory processing. Although the SI therapy, as interfering with the body, can be carried out only by a qualified SI therapist, but it is essential to know about the possibility of using it. The idea of spreading the message about the SI has become a reason for choosing the topic of this project.

The aim of this study was to broaden the Kujawy and Pomorze University students' knowledge by lectures on the SI disorder and its treatment by SI therapy. This knowledge can be very useful, taking into consideration a fact that the majority of students in the KPSW already is, or will be in the near future educators.

Research problems are expressed in two questions:

1. What is the knowledge of Kujawy and Pomorze University in Bydgoszcz's students on the SI therapy before the lecture about the SI?
2. What is the knowledge of Kujawy and Pomorze University in Bydgoszcz's students on the SI therapy after the lecture about the SI?

Material and method.

The implementation of the project was fully approved and accepted by authorities of the university. Research (2 measurements) and lectures that constitute the whole project took place in the winter semester of the academic year 2014/2015. The described research project was carried out in three stages. In the first stage the first measurement was made and it concerned the examined people's level of knowledge on the SI. It had a form of a survey. On the basis of accumulated references, a questionnaire consisting of 15 questions, concerning basic information about the SI, was created. The questions asked in the survey were closed-end questions, with conjunctive cafeteria. Here are sample questions:

1. The SI therapy should be conducted by:

- a) an SI therapist, b) a paediatrician, c) a child psychologist, d) a pedagogue.

2. If there are problems with receiving and integrating sensory impressions, some dysfunctions in the development may occur:

- a) cognitive, b) emotional, c) motor.

3. Proprioception is:

- a) a superficial sensibility, b) profound sensibility, c) visceral sensibility.

4. Praxis is/are:

- a) a perception of tactile impressions, b) a movement planning, c) low motor skills, d) high motor skills.

5. If a child intensively revolves

around his/her own axis, it can be a symptom of: a) sensory hypersensitivity, b) sensory insensibility.

6. Materials used in the SI therapy are used for:

a) tactile stimulation, b) visual stimulation, c) olfactory stimulation, d) gustatory stimulation.

The test was presented in a form of slides. Each examined person scored 1 point for each fully correct answer, a half of a point for an incomplete, and no points for an incorrect answer. The maximum number of points is 15.

The second stage of the project was a multimedia lecture on the SI therapy. Very low results of the first test justified its usefulness – for majority of the students the SI issues were completely new and unknown before the test. 17 lectures were delivered on various degree courses. Each lecture lasted from 2 to 4 lecture hours – depending on curricular capabilities of a given course, e.g. as elements of: a monographic lecture, a subject of a clinical psychology, contemporary problems of psychology, the basics of psychiatry, the basics of psychology, and MA seminar. It also depended on availability of the students as well, e.g. students' interests, their willingness to participate in extra-curricular activities as a part of the Student Scientific Association "Psychology". The lectures were presented in a form of slides. Exemplary topics (A. Rais, 2011; C. Kranovitz, 2012) discussed during the lectures were:

1. Symptoms of the SI dysfunctions:

a) irregularities in receiving, processing, and organization of sensory stimuli, e.g. sensory hyperreactivity and non-reactivity, white noise; b) sensorism; c) difficulties with concentration; d) learning difficulties despite a high-level intelligence; e) retardations and disorders of speech development, perseverations; f) movement retardations and disorders,

too high, or too low level of physical activity, poor behavioral organization, praxis' disorders, problems with coordination on the field of high and low motor skills, poor balance, motor stereotypes; g) struggle to adapt to new situations; h) aggressive responses, impulsivity, withdrawal, low self-esteem, helplessness, and sense of guilt

2. Diagnostic process of the SI dysfunctions that depends on the ease of collaboration with a child, the level of his/her concentration, mood:

a) an interview with parents about pregnancy, birth, foregoing development, illnesses, and typical behavior of a child; b) questionnaires completed by the parents; c) systematic observations of the child's free and easy play; d) observation of responses to sensory stimulation, observation of posture, balance, coordination of moves, eye movements; e) medical records – analysis of information from experts taking care of the child, e.g. neurologists, speech therapists, psychologists; f) standardized tests, e.g. South-California Integration SI Tests, which assess the child's functioning in areas such as visual perception, processing somatosensory sensations (touch and proprioception), processing of vestibular sensations, hand-eye coordination and praxis; g) trials, in which the child performs certain exercises that check reactions, muscle tension, balance, coordination, and eye work; h) diagnosis of the SI dysfunctions: a child with the SI disorder presents more than one of the symptoms of the SI dysfunction; i) a summary of the diagnosis: a conversation with the parents, the SI therapist's presentation about the child's individual therapy program.

3. The SI therapy's actions:

a) it supports feeling of the exteroceptive (surficial) stimuli, e.g. feeling of touch, vibration, pain (nociceptive), itching, temperature, taste – received by

the skin receptors; teleceptive (distant) stimuli, e.g. sight, hearing; and proprioceptive (profound) stimuli – signals from receptors in the muscles, tendons and labyrinth (feeling of balance); b) it supports the differentiation of stimuli and accuracy of perception and analysis of information from proprioceptive stimuli (inexact, protopathic), as well as the superficial and teleceptive feeling (exact, epicritic); c) it supports the integration of stimuli – improves synaptic connections in the child's central nervous system (CNS) what results in the improvement of transmission quality and the organization of the information received through the senses, which subsequently improves functioning of the CNS; d) the goal – to improve the behavior on field of the motor skills (correct muscle tension and coordination of moves), to improve the emotional language and cognitive skills, and to increase efficiency of learning.

4. The SI therapy method – it's stimulating the child's senses through and during physical activity, i.e. providing the child with a suitable for his/her disorder sensory stimuli from the environment and his/her body which results in an improvement of the sensory integration in the brain:

a) technique – scientifically oriented play during which exercises are selected according to the child's individual needs, free and easy activities that trigger automatic sensory reactions are preferred; b) tools – special equipment used in the SI therapy: suspended platforms, hammocks, skateboards, balance beams, slides, climbing ropes, and materials used for tactile, visual, olfactory, and gustatory stimulation; c) duration of the SI therapy: from 6 to 24 months, sessions take place one or two days a week.

In the last (third) stage of the project a re-measurement was held with help of the same “questionnaire method” and

the same test of knowledge about the SI.

A selection for the research was layered and random in character. The study included 444 students of the KPSW (299 women and 145 men), 4 faculties (Faculty of Social Sciences and Philology, Faculty of Law, Administration and Economics, Faculty of Technology and the Center of Postgraduate Education and Continual Education), 12 fields of full-time, part-time, and postgraduate studies (Pedagogy, Social Work, English Philology, Law, Public Administration, Economics, International Relations, Computer Science, Construction, Geodesy and Cartography, Occupational Therapy, Socioterapy, Psychosocial Skills Trainer). Six students are immigrants from Ukraine (4 people), Belarus (1 person) and Armenia (1 person), studying International Relations at the KPSW. The youngest participant of the research was 18 years old, and the oldest one was 56; the average age of the examined students is 26 years.

Results of the research and analysis.

In order to get answers to the research problems: 1) What is the students' knowledge on the SI therapy before the lecture about the SI?, and 2) What is the students' knowledge on the SI therapy after the lecture about the SI?, average results of the Test 1 and the Test 2 for the given groups have been compared. The result of the empirical studies are presented in the Chart 1.

As it has been already mentioned, in the first measurement the students shows very little knowledge about the SI therapy issues. 385 surveyed people (86.7% of all the respondents) had never heard of the SI. The average score obtained by the students in the first test was 1 point (for 15 possible). After taking part in a lecture about the SI, the measurement (2nd) showed that the average test score increased to 13 points.

Chart 1. The results of the test on knowledge about the SI

Subject, year, type of studies	Number of surveyed students	Test 1 results	Test 2 results
Pedagogy, 1st, part-time, first-cycle studies	54	1,2	13,3
Pedagogy, 3rd, part-time, first-cycle studies	39	0,6	13,7
Pedagogy, 1st, part-time, second-cycle studies	82	4,9	13,7
Pedagogy, 2nd, part-time, second-cycle studies	15	1,4	13,8
Social Work, 3rd, part-time studies	6	1,6	13,8
English Philology, 1st, part-time studies	14	0	12,9
Law, 4th, full-time studies	10	0	12
Law, 1st, part-time studies	22	0,9	11,5
Law, 4th, part-time studies	18	1,2	14,2
Public Administration, 1st, part-time studies	51	0,2	13,2
Economics, 1st, part-time studies	23	0	13,7
International Relations, 2nd, full-time studies	7	0	10,8
Computer Science, 1st, part-time studies	22	0	13,9
Construction, 1st, part-time studies	26	0	13
Geodesy and Cartography, 1st, part-time studies	32	0,2	11,4
Occupational Therapy, 1st, post-graduate studies	9	0	13
Sociotherapy and Psychosocial Skills Trainer, 1st, post-graduate studies	14	5,6	13,5
Together	444	1	13

Conclusions and discussion.

As a result of the whole research, clear answers to the two research questions/problems were obtained:

1) Knowledge of the students at Ku-jawy and Pomorze University in Bydgo-szcz on the Sensory Integration Therapy before the lecture was infinitesimal.

2) Knowledge of the students at Ku-jawy and Pomorze University in Bydgo-szcz on the Sensory Integration Therapy after the lecture considerably increased.

Selecting students of different disciplines and specialties of science seems to be right. The study revealed that the students represented professions in which the knowledge of the SI may be very

useful. Among the respondents there were employees of day nurseries, kindergartens, primary, junior high, and high schools; language schools, universities, nursing homes, homes of mutual aid, training and education centers, sociotherapeutic clubhouses, occupational therapy centers, psychological and pedagogical assistance centers, child's support and family guidance centers, rehabilitative and hippotherapeutic clinics, hospitals, juvenile detention centers, sports clubs, and even toy shops.

Many of the surveyed students showed a great interest in the SI method. They asked lots of questions, discussed some issues, shared their experiences. They also declared the usefulness of this

knowledge in their private lives as they care about their children's health and well-being.

The research confirmed an assumption of very little knowledge about the SI issues, its dysfunctions, and the SI therapy among the Kujawy and Pomorze University in Bydgoszcz's students. Taking into consideration a significant usefulness of the SI method, promoting it seems to be really valuable. The idea would be to subsume a new academic subject – Sensory Integration – into the curricula of universities. It may turn out to be of great importance for the students of the following faculties: Psychology, Pedagogy, Social Work, and Occupational Therapy.

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