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Diagnosis within the scope of neuro-speech therapy and neuropsychology by adopting the methodology of the social interactionist theory. A case study of a man with the general brain disorders

SUMMARY

In this article the social interactionist theory was adopted as the methodological basis of diagnosis and therapy in order to demonstrate the multitude of factors which may have an influence on the linguistic activity of an individual. A method used in research was the individual case study of a man with the general pathology of central nervous system caused by biological factors (complications of the neuro-oncological treatment) and social ones (limited process of socialization). The results of neuropsychological and projective tests, questionnaires as well as experimental clinical trials have shown deficits in all areas of man's functioning (speech, communication, cognition, social and emotional area) and have set the direction of a therapeutic approach.

Key words: interaction, neuro-oncology, speech disorders, communication disorders, cognitive impairments, diagnosis of speech-language disorders, neuropsychological diagnosis

INTERACTION THEORY

The speech therapy's thought views interaction as a process composed of two equivalent skills which are: attribution of the meaning to human actions and adjustment of one's behavior to the requirements of the reference group. This adaptation is determined both by general, linguistic world knowledge (cognitive linguistic proficiency), as well as by the familiarity with the language use in a given group (communicative linguistic proficiency). These proficiencies may come into being if the interlocutors' experience and knowledge are similar or identical and expressed accordingly to the general patterns (Grabias 2007, 2012).

Interaction theory creates the opportunity to analyze linguistic phenomena while not being limited only to man's biological and communicative activity. According to this theory, it is through language that the individuals express their manner of understanding the world, their emotions, convictions and values towards a given phenomenon, appropriately to the particular context and situation (Panasiuk 2013). This complex vision of language behavior imposes a specific diagnostic procedure which is connected to the evaluation of three dimensions: text (evaluation of the understanding and construction of language structures), metatext (evaluation of the adequacy of modal categories use), and context (evaluation of functioning in different communicative situations) (Panasiuk 2012).

Interaction theory comprises therefore both methodological and practical basis of speech theory as a science and thanks to the exhibition of the link existing between biological processes and broadly understood communication, it increases its diagnostic and therapeutic opportunities (Michalik 2013).

With reference to the patients whose set of symptoms does not indicate specific case of speech pathology, the interactive approach enables: specification of the set of factors (primary and secondary ones) which have shaped the non-specific image of the disorder; indicating patient's deficits and opportunities; choosing the most effective treatment methods (Panasiuk 2012). Such a group is comprised of patients with entangled history of neuro-oncologic treatment. In their case it is necessary to use a method which will show the mutual relation existing between biological, psychological and social factors.

CHILDREN'S TUMOURS OF THE CENTRAL NERVOUS SYSTEM

Tumours of the central nervous system constitute one of the most popular cancerous diseases in the population of children. It is estimated that they comprise 20–25% of the tumours in this developmental period (Szołkiewicz et. al. 2009). CNS tumours, typical of the infancy, appear frequently before the first year of child's life and between 2–3 and 5–7 years (Bożek 1989).

On the basis of their morphologic features, CNS tumours can be divided into: benign (slow dynamic of growth; they do not have impact on patient's general health; deformation of a given body part in the case of big tumours), malignant (quick dynamics of growth, symptoms occurring quickly; they metastisize quickly) (Bożek 1989).

The localization of a tumour is considered a separate criterion of CNS tumours. According to tumour localization one can distinguish:

1. Subtentorial tumours (infratentorial) – constitute 60% of all brain tumours. Intracranial pressure is one of the general symptoms. Inside this group one can distinguish: cerebellar hemisphere tumour, cerebellar vermis tumour, fourth ventricle tumour and the tumours of brain stem.

2. Supratentorial tumours – comprise 40% of brain tumours. In children's case, they are often characterized by big size, which makes it impossible to ascertain the tumour localization in detail. However, it is claimed that there are certain anatomic regions, damage of which may indicate the clinical picture of the tumour. The group of supratentorial tumours consist of: brain hemispheres tumours, lateral ventricles tumours, third ventricle tumours, tumours of sella turcica region and the tumours of optic chiasm (por. Wocjan, Żarski 1971; Traczyńska-Kubin, Dąbrowski 1985; Lanzkowsky 1994).

The symptoms typical of the progress of neuro-oncologic disease are divided into two major groups (Szołkiewicz et. al. 2009):

1. alleviated intracranial pressure (headaches, vomiting, disturbances of visual acuity, pareses of cranial nerves, impaired consciousness and excessive drowsiness)
2. focal neurologic symptoms (dependent on the damaged structure)

Type of CNS tumour (duration time, type, dynamics, progress of disease and localization influence the choice of correct treatment methods (Bożek 1989). In case of malignant tumours and those which cannot be qualified for surgery, the radiotherapy constitutes the leading method.

DIRECT AND REMOTE EFFECTS OF RADIOTHERAPY

Radiotherapy is used in cases of malignant tumours, which are susceptible to radiation (Traczyńska-Kubin, Dąbrowski 1985). Radiation results in damaging of both tumour and health cells which leads to a number of harmful effects (Bożek 1989). Among the transient (direct) side effects are: post-radiation skin reaction and alopecia. Remote effects of radiotherapy can be classified into five groups:

1. growth and development disorders, intensity of which is linked to child's age and the dose (positive correlation);
2. disorders of functioning of systems and organs which lead to changes in the regions which were objected to radiotherapy. It often happens that changes which were caused by excessive dose are irreversible and lead to patient's death;
3. disorders of sexual glands which may have an impact not only on the hormonal and fertile aspect but also on genetic one (however, there are no changes observed in the offspring of the patients who were treated by radiotherapy);
4. the problem of ontogenesis as a consequence of radiotherapy, which emphasizes the importance of observing the patient during their treatment with ionizing radiuses which can have a carcinogenic effect;
5. psychosocial disturbances can be manifested, in some cases, in mental retardation of a child or in conduct disorders

Complications which are caused by this treatment method are not identical in each case – they differ when it comes to the intensity and complexity of symp-

toms. Their dissimilarity exacts the application of individualized rehabilitative actions which comply with patient's developmental period and with the support of the people closest to them.

THERAPEUTIC ACTION AND THEIR DETERMINING FACTORS IN THE PROCESS OF NEURO-ONCOLOGIC TREATMENT

The key role in the process of neuro-oncologic treatment befalls the guardians of a given child, whose task is to cooperate closely with the medical personnel. A positive relation with the doctor and the nurses ensures the child that their parents take active part in the treatment and that all the procedures are necessary. Maintaining child's positive mood is crucial for the success of a therapy. Filling child's schedule with various activities (such as didactic classes or trips) is also extremely significant as these activities constitute indispensable part of parent's care of the child suffering from cancer. Such actions help the patient detach from the everyday life in hospital. They also symbolize the return to the normal life (Bożek 1989). Despite the medical treatment, it is also important to provide therapeutic care not only for the child but also for their family. Rehabilitative treatment should take place also in the form of psychotherapy and it should consist of multispecialist rehabilitation (Traczyńska-Kubin, Dąbrowski 1985).

FUNCTIONING OF PATIENTS WITH CHRONIC DISABILITY

Definition of disability

World Health Organization defines disability as the set of obstacles which are encountered in the environment as a consequence of lost abilities (Piotrowicz 2004). Among the group of disabled, who experience problems with self-reliant dealing with their own problems, one can distinguish people who are: crippled, mentally retarded, physically disabled and suffering from chronic diseases (Kościelak 1996).

Quality of life of the disabled people

Quality of life is the total and subjective satisfaction of an individual in the social, physical and psychological dimensions (Pąchalska 2007). It is often stressed that different factors influence the appraisal of the quality of life in cases of the healthy and disabled people which is connected to various fields of their activity which is, in turn, determined by the opportunities (Zawiślak 2006). The examples of the priorities for the healthy people are: work, earnings, education, self-realization, interests. On the other hand, the satisfaction of the disabled is influenced by: social attitudes, the type of disability, the sense of independence,

self-determination and the opportunity to collect new experiences. According to the research results, the disabled want and can enjoy their lives, even if the society judges it as less valuable (Dębska 2006).

The awareness of determinants strengthening the sense of good quality of life in case of the disabled should be the factor stimulating therapists, parents and institutions to create the opportunities of mobilization in the significant fields.

Social determinants in the development of the disabled

The immediate surroundings (composed of family home and peers) should dominate when it comes to stimulating one's development. These surroundings should set natural challenges for such an individual. A factor which hampers the use of environmental influences is the popular perception of a disabled person as weak, lonely, withdrawn, dissatisfied with their life, not having the chance for a happy family or married life. This attitude conditions the process of creating a so-called secondary impairment – the conviction of being helpless despite possessing real opportunities and competences (Parchomiuk, Byra 2006). Growing awareness of one's restrictions fosters a low sense of belonging to the society, and this indicator decreases with age (Dębska 2006).

The lack of satisfactory contacts with significant others (parents, peers) and insatiability of basic needs (needs of belonging, love, intimacy, emotional contact), resulting from a negative self-image, causes the feeling of alienation (Kościelak 1996). This can be avoided by appropriate socialization understood as "preparation for constructive participation in social life". Its superior goal is to satisfy the need of autonomy and promoting the development of such traits as will, spatial orientation, motivation, comprehensive situation analysis (context interpretation, noticing the inter-contextual relation, understanding nonverbal signs) (Kościelska 1984: 41).

In the educational process, traits compatible with the whole community, resulting from the developmental period, should be given a priority. Such a strategy creates the possibility to overcome limits and to reveal individual's maximal opportunities (Kirenko 2007).

Emotions and personality of disabled people

Family is a basic unit which enables children to develop property, also in the emotional sense, by satisfying their psychophysical needs. The need of love is the most important of them all and it is understood as "the entirety of specific behaviours and psychological processes referring to them which create and uphold the mutual human relation making it personal and relatively permanent" (Janion 2006: 247). A child who suffers from severe, chronic disease does not experience all the aspects which are responsible for proper emotional development and bond making. This happens because such a child is frequently hospitalized (being

away from home) and because of chronic tiredness and inveterate parents' stress. (Janion 2006).

Chronic disease may therefore cause the disintegration also in the psychological aspect which is reflected in: lowered self-esteem, sense of guilt, hostility, aggression, shame, resignation from one's goals, lack of aspiration and withdrawal from the external world (Kirenko 2007).

As a consequence of unfavourable environmental conditions (hindered or disturbed relations), personality disorders may appear. Improper personality development in disabled people and chronically ill is called "homilopathy". This condition consists of: inferiority complex, oversensitivity; mood swings, excessive concentration on one's own person, martyr-like attitude, hostility, aggression and viciousness towards the others (Hulek, Larkowa 1974).

It is often emphasized that disability does not determine entirely the personality of an individual (Kirenko 2007), but it can contribute to formation of traits which do not foster development (such as difficulty in adjustment and in performing family, professional, sexual social roles) or it can predispose to suffering from personality disorders (Jakubik 1996).

AUTHOR'S OWN RESEARCH

Patient's clinical description

Case description concerns 32-years-old patient who suffers from unspecific disorders in following spheres: cognitive, linguistic, communicational, motivation-emotional and social. Specified deficits are complications and side effects of neuro-oncologic treatment and unfavourable environmental influences.

First symptoms of cancer (exophtalmos of left eye bulb, eye watering, without any pain) appeared when patient was 2 year 8 month old. Computed tomography (CT) and neurosurgical consultation revealed *glioma nervi opici* (glioma of optic nerve). At that time, parents did not contest to carry out a surgery.

During following years, the patient was not subjected to any treatment, felt well and did not report any neurological symptoms. At the age of 5 year 4 month, another CT diagnosis was performed and it proved the existence of sizeable, abnormal mass located in the left eye bulb crossing over to optic chiasm area. Moreover, the nystagmus and pupillary light reflex were observed – **ophthalmological** consultation was recommended. Furthermore, it was concluded on the basis of CT results, that neurosurgical intervention was not justified.

While being 7 years 9 months old, the patient underwent another CT examination which provided the following data: thickening of the left optic nerve to 13 mm and the right one to 8mm at their full length, until the optic canals; thickening of the optic canals; slight dislocation of the fourth ventricle to its left side; isodense infiltration of brain stem, cerebellar tentorium and of the right cerebellar

hemisphere; no changes in other brain structures. With comparison to the previous CT, the progress of changes was reported. After oncologic consultation, it was decided that the patient cannot be qualified to surgical excision because of the localization of tumour. During the treatment, radiotherapy was considered as necessary in the form of Co-60 gamma radiation on right and left cranial areas.

On the basis of two following CT examinations, the remission of neoplastic transformations was diagnosed, with comparison to the previous state. However, complications caused by invasive treatment (radiotherapy and pharmacotherapy) have appeared: left eye blindness, growth disorders, cognitive disorders – mainly connected to memory (which is proven by sharp theta waves visible in electroencephalography examination, and which can be attributed to the changes found by magnetic resonance imaging), Hashimoto's disease, dyspnoea, the palsy of right vocal fold (dysphonia), the reduction of the articulators efficiency.

Demonstrated difficulties characterize the present clinical state of the patient. Treatment process and resulting complications have restricted patient's functioning in numerous aspects of living, especially in the social sphere. That is why the improvement of functioning in cognitive and linguistic spheres conditions the possibility of individual functioning in a society.

DESCRIPTION OF DIAGNOSTIC METHODS

The material under research was collected over the period of 6 months during weekly meetings. In order to prepare a diagnosis (a description of a patient within all spheres of functioning) and to program therapeutic actions the following methods were applied:

Screening methods:

1. Mini–Mental State Examination (MMSE) – measurement of cognition efficiency (Kotapka-Minc 2007);
2. A Clock Drawing Test – the assessment of cognition activity (Kotapka-Minc 2007).

Neuropsychological tests:

3. California Verbal Learning Test (CVLT) – measurement of learning capabilities and reproducing verbal material (Łojek, Stańczak 2010);
4. Attention and Observation Test (TUS) – b/k and 6/9 versions – measurement of three attention indicators: speed of perceptual operation, diversification of perceptual material and resistance to distraction (Ciechanowicz, Stańczak 2006);
5. Ruff Figural Fluency Test (RFFT) – measurement of nonverbal fluency, i.e. creating the biggest number of patterns in a limited amount of time (Łojek, Stańczak 2005).

Questionnaires:

6. Emotional Intelligence Questionnaire (INTE) – measurement of the capacity to comprehend, recognize, control and use emotions effectively (Jaworowska, Matczak 2008);

7. Satisfaction With Life Scale (SWLS) – measurement of satisfaction with life sense (Juszczyński 2009);

8. Social Competence Questionnaire (KKS) – measurement of capability that condition the efficiency in various social situations (Matczak 2001).

Projective methods:

9. Rotter Incomplete Sentence Blank (RISB) – measurement of maladjustment (Jaworowska, Matczak 2008).

Experimental and Clinical Trials:

10. Diagnostic tests devised on the basis of standard procedures in case of patients with brain damage (Panasiuk 2012).

THE CHARACTERISTICS OF PATIENT FUNCTIONING – THE DISCUSSION OF RESEARCH RESULTS THE ASSESSMENT OF SOCIAL INTERACTION

The social characteristics of a subject is limited only to the description of family environment. Due to a long-term treatment, frequent hospitalizations, bad health condition and the resulting parents' overprotectiveness, the man did not function on his own and did not establish closer relationships with his peers (during the whole time of education he had a one-to-one teaching and did not participate in extra-curricular activities).

During adolescence, a regression in social functioning took place. However, the conversation with the subject show that he would like to establish relations with his peers and to spend time in a more active way. Such an attitude displayed by the subject shows that further work on his weaknesses is important to him. The factor that limits the subject when it comes to his self-fulfilment (accomplishing goals and aspirations, opening to the outside world) is lack of stimulation on the part of the people around him – his family. The father of the subject thinks that because of health condition and the resulting limitations, his son is not capable of an independent life, setting goals, planning, making decisions – neither has he clearly defined norms of conduct.

The siblings are very important people in the subject's closest circle. The subject admits that this relationship is a source of positive emotions for him and constitutes the only way of contact with his peers.

THE ASSESSMENT OF FUNCTIONAL CAPABILITIES

The subject has a very poor evaluation of his abilities to manage various life situations. He seeks the cause of his failures in low articulation clarity (dysarthria) and shyness. The subject's withdrawal from any interaction (in the time of childhood and youth) caused the social skills (abilities to handle particular situations effectively) not to form at all. Their shortage is visible in: low behaviour elasticity and communication efficiency; inability to create emotional bonds; low assertiveness level.

Those features are further reinforced by the attitude of the closest people, who perceive the subject as a person withdrawn, insecure, etc. as well as do not encourage him to undertake unassisted activity. The protective attitude of the parents could have caused secondary impairment of the subject, which in turn results in the following functional areas: motivational (difficulty in learning new relationships as well as in understanding and anticipating them); emotional (apathy, anxiety) and social (withdrawal from any relations).

The difficulties shown above have an effect on the subject's very low sense of the quality of life. The biggest dissatisfaction concerns two spheres: family situation (the subject would like to live with both parents and have greater freedom of action) and health condition (in the subject's opinion, the disease did not allow him to plan his life accordingly and to build constructive relations with others).

Currently, the subject is demonstrating a highly combative attitude, which is related to a sense of depression, inability to handle frustration, lack of constructive activity and incapability to maintain satisfactory relationships with other people. In order to improve the quality of the subject's functioning it is vital to direct the therapy onto independent activity and encouragement to make autonomous decisions, which could affect his self-esteem in a positive way.

THE ASSESSMENT OF LINGUISTIC AND COMMUNICATION ABILITIES

Linguistic competence (the knowledge how to use signs and linguistic rules) as well as communication competence (the knowledge on how to build utterances in accordance with the context) was detected in the subject. The subject understands information conveyed verbally within and beyond the situational context of a literal character. The proper interpretation of metaphorical utterances is hindered due to the deficit of abstract thinking.

The description of linguistic and communication functioning was carried out from the point of view of the interaction theory and it was related to the following aspects of (Panasiuk 2012):

1. The text – the man does not display difficulties with understanding verbal utterances and written texts (because of limited capabilities of short-term and operational memory he cannot evoke details). Next sphere taken into account when evaluating a text is the subject's construction of verbal and written utterances which take the form of short sentences, yet retain the reference to the given topic.
2. The meta-text – the subject notices the difference between the indicators of modal category of language (he is able to assess appropriately the grammatical, semantic and pragmatic correctness). Difficulties appear in the performance aspect (self-reliant formation of utterances in accordance with the given modality). Such a deficit profile points to the limited access to the knowledge on linguistic activities (meta-language) when retaining linguistic competence.
3. The context – the analysis of the material collected on the basis of the interview, subject observation and experimental and clinical trials shows that the subject understands a situational context (conveyed both in an open and hidden way) as well as he can define the significance and relations between the characters in the event. Difficulties appear in the realization aspect – self-reliant formation of utterances in accordance with the given communicative situation.

The analysis of the picture of linguistic and communicative functions (difficulties when forming the utterances take place in each interactive category) of the man under research does not point towards a specific speech pathology unit; it proves, however, that there is an unusual and individual disorder picture (resulting from a link between the primal and secondary factors), which determines an individualized diagnostic and management in a therapeutic area.

THE ASSESSMENT OF COGNITIVE FUNCTIONING

The subject's cognitive disorders are not of a homogenous nature and they are not connected with only one modality, which weighs in favour of their generalised character and correlates with the neuro-oncologic treatment history and neurographic test results. Special problems can be noticed within the scope of memory, attention, numbers use and spatial orientation.

Memorising and storing deficits are dominant in memory disorders, which is visible through problems with material retaining with a view to reconstructing it later. The subject repeats certain words stereotypically and despite the repetitions of the source material does not increase their number (memorising is of passive nature). Proactive inhibition takes place within the subject; it both hinders memorising subsequent information and also constitutes an important factor behind forgetting.

Attention (the selectivity of psychological processes) is at a very low level. In spite of no difficulties in distinguishing perceptual material (differentiating between disruptive and proper stimuli) the subject tends to omit crucial elements. He

also has problems with adjusting his energy level to task-solving, which affects efficiency and the pace of work negatively.

The inter-current disorder, apart from memory and attention problems, is the difficulty in using numbers (solving and filling in equations with mathematical symbols, solving text exercises and equations from memory), time word problems (telling the time correctly) as well as map orientation problems (showing directions). The above mentioned issues are connected to deficits in abstract and notional thinking (understanding notions and relations that are imprecise).

The picture of higher mental activities points to their executive nature (EF), which manifests itself in impulsive and unplanned action (the subject does not apply any work efficiency improvement strategies); lack of planning in action; difficulty with spatial organization of perceptual material; lesser efficiency when under time pressure as well as lowered criticism (the connection between EF and emotional control).

The presence of numerous deficits (memory, attention, number use and understanding spatial relations) and difficulties (forgetting the material having different structure, fatigability, attention deficit) as well as the structure of results in neuropsychological tests (MMSE, RFFT, CVLT) define the profile of the subject as characteristic for people with early dementia.

THE ASSESSMENT OF EMOTIONAL AND MOTIVATIONAL PROCESSES

The patient displays difficulties in accurate perception and interpretation of information carried by emotions as well as in effective self-motivation to various actions. Special deficits occur in emotions related to cognitive activity, which is connected to the lack of school experience, stimulation and prompting the interest in the outside world. This factor conditions the motivational processes, which in the subject's case are characterized by very low responsiveness. The subject has also problems with the constructive application of emotions. When in contact with the patient, it is manifested through: lack of initiative, passivity and inhibition, trouble with recalling previous successful experiences so as to overcome a given obstacle.

The dominant feature in the subject's attitude is anxiety. The subject is especially afraid of social evaluation; he thinks that it is formed from the angle of his disorders. Lack of social experience prevented the patient from comparing those notions with reality (to create accurate self-knowledge), which has caused social withdrawal and has influenced the lowered self-esteem. The difficulties are further compounded by low emotional resistance (the ability to undertake effective action despite the emotions experienced).

Due to limited character of interactive experiences, the subject did not have the possibility to live through numerous emotions and feelings, which is currently displayed by the problems with their recognising and understanding. Additionally, the subject's limited ability to perform introspection and insight hinders his self-cognition and the constructive application of emotions in various activities. In spite of the problems experienced, the subject manifests the will to act. However, he requires external stimulation and control.

THERAPEUTIC IMPLICATIONS

The untypical picture of disorders requires the application of multiple specialised therapeutic methods. The goal of speech and neuropsychological therapy of the subject with an early dementia should be multimodal stimulation, exercise on specific and abstract material as well as triggering communication behaviour (verbal and non-verbal).

THE CHOICE OF STRATEGY

The formulated goal of the therapy, speech-therapy diagnosis, clinical condition of the patient, therapy conditions and planned period of management in a therapeutic area define the choice of an adequate policy (Maruszewski 1974). With reference to the patient described above, the best choice is a realistic strategy allowing for the development and support of a definite function level (including delayed symptom progression) and inclusion of the family into the therapeutic process (Misztal, Szepietowska 2006).

THE ORGANIZATION AND OUTLINE OF MANAGEMENT IN A THERAPEUTIC AREA

When devising a therapeutic program it is essential to consider specific factors related to a given disorder (the behaviour and disturbed actions and mental functions), personal features of the patient (age, education, interests, attitude towards their problems, attention to the necessity of psychotherapeutic action), the nature of the patient's environment (the family members' attitudes, the possibility of cooperation) (Pąchalska 2007).

With reference to the man described above, it is vital to conduct a therapy that takes the specificity of the disorder into account (the communication skills therapy – the fulfilment of modality and messages relevant to a social situation; the language skills therapy – enhancing prosody, enriching active vocabulary and syntactical complexity of a text; cognitive process therapy – memory, attention,

abstract thinking; the executive functioning therapy – planning and creating action strategy).

The untypical picture of the deficits determines the nature of therapeutic meetings, which in this case should be in the individual form. Group therapy, however, would be supportive from the point of view of social skills enhancement and opening the patient onto the outside world. In order to stimulate linguistic and emotional behaviour as well as the abilities to orientate oneself within the reality it is essential to apply a psychotherapy that will allow the subject to present his language and communication skills in the social life.

BIBLIOGRAPHY

Bożek J.,1989, *Ogólne zasady leczenie,* [in:] *Nowotwory wieku dziecięcego*, ed. Bożek J., Warszawa, pp. 54–68.

Byra S., Parchomiuk M., 2006, *Rodzaj niepełnosprawności, a poczucie jakości życia*, [in:] *Jakość życia, a niepełnosprawność. Konteksty psychopedagogiczne*, eds. Palak Z., Lewicka A., Bujnowska A., Lublin.

Dębska U., 2006, *Poczucie jakości życia osób niepełnosprawnych i ich opiekunów. Doniesienie z badań,* [in:] *Jakość życia, a niepełnosprawność. Konteksty psychopedagogiczne*, eds. Palak Z., Lewicka A., Bujnowska A., Lublin.

Grabias S., 2007, *Język, poznanie, interakcja*, [in:] *Mowa. Teoria – praktyka*, t. 2: *Język, interakcja, zaburzenia mowy. Metodologia badań*, eds. T. Woźniak, A. Domagała, pp. 355–377, Lublin.

Grabias S., 2012, *Teoria zaburzeń mowy. Perspektywy badań, typologie zaburzeń, procedury postępowania logopedycznego,* [in:] *Teoria Zaburzeń Mowy*, eds. S. Grabias, M. Kurkowski, Lublin, pp. 28–31.

Hulek A., Larkowa H. 1974, *Problemy psychologiczne rehabilitacji inwalidów,* Warszawa.

Jakubik A., 1996, *Mit osobowości pogranicznej,* [in:] *Studia z psychologii*, eds, Grochowska i in., Warszawa, pp. 300–305.

Jaworowska A., Matczak A., 2008, *Kwestionariusz Inteligencji Emocjonalnej INTE*. Podręcznik, Warszawa.

Jaworowska A., Matczak A., 2008, *Test zdań niedokończonych Rottera RISB*. Podręcznik, Warszawa.

Kirenko J., 2007, *Indywidualna i społeczna percepcja niepełnosprawności*, Lublin, pp. 9–26.

Kościelak R., 1996, *Funkcjonowanie psychospołeczne osób niepełnosprawnych umysłowo*, Warszawa, pp. 168–200.

Kościelska M., 1984, *Upośledzenie umysłowe, a rozwój społeczny*, Warszawa, pp. 13–83, 263–286, 347–350.

Łojek E., Stańczak J., 2005, *Test Płynności Figuralnej Ruffa RFFT. Polska standaryzacja i normalizacja*. Podręcznik, Warszawa.

Łojek E., Stańczak J., 2010, *Podręcznik do Kalifornijskiego Testu Uczenia się Językowego CVLT. Polska Normalizacja*, Warszawa.

Janion E., 2006, *Więzi emocjonalne w rodzinach dzieci chorych,* [in:] *Jakość życia, a niepełnosprawność. Konteksty psychopedagogiczne*, eds. Palak Z., Lewicka A., Bujnowska A., Lublin.

Juszczński Z., 2009, *Narzędzia pomiaru w Promocji i Psychologii Zdrowia*, Warszawa

Lanzkowsky P., 1994, *Hematologia i onkologia dziecięca*, Warszawa, pp. 264–278.

Maruszewski T., 1974, *Mowa, a mózg. Zagadnienia neuropsychologiczne*., Warszawa, pp. 50–60, 103–150.

Matczak A., 2001, *Kwestionariusz Kompetencji Społecznych KKS*. Podręcznik, Warszawa.

Michalik M., 2013, *Teoria logopedii jako interakcja. Między interakcjonizmem symbolicznym a lingwistyką mentalną,* [in:] *Interakcyjne uwarunkowania rozwoju i zaburzeń mowy*, Kraków.

Misztal H., Szepietowska M., 2006, *Terapia neuropsychologiczna,* [in:] *Podstawy neuropsychologii klinicznej*, eds. Domańska A., Borkowska A., Lublin.

Panasiuk J., 2012, *Afazja a interakcja. TEKST – metaTEKST – konTEKST*, Lublin, pp. 727–738.

Panasiuk J., 2013, *Sprawności interakcyjne i komunikacyjne jako kryteria różnicowania zaburzeń rozwojowych,* [in:] *Interakcyjne uwarunkowania rozwoju i zaburzeń mowy*, Kraków.

Pąchalska M., 2007, *Neuropsychologia kliniczna-Urazy mózgu tom 2*, Warszawa, pp. 326–338.

Szołkiewicz A., Adamkiewicz-Drożyńska E., Balcerska A.,2009, *Guzy ośrodkowego układu nerwowego u dzieci – analiza objawów i propozycje diagnostyczne,* [in:] *Wybrane problemy kliniczne*, Gdańsk

Traczyńska-Kubin H., Dąbrowski M.,1985, *Guzy ośrodkowego układu nerwowego*, [in:] *Neurologia dziecięca*, ed. Czochańska J., Warszawa, pp. 423–443.

Wocjan J., Żarski S.,1971, *Wskazanie do leczenie neurochirurgicznego chorób układu nerwowego u dzieci*, [in:] *Wybrane zagadnienia z neurologii dziecięcej*, ed. Michałowicz R., Warszawa, pp. 338–352.

Zawiślak A., 2006, *Poczucie jakości życia osób z niepełnosprawnością intelektualną,* [in:] *Kwartalnik Pedagogiczno-Terapeutyczny Nasze Forum*, Nr 1–2, Bydgoszcz.