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## Cluttering in the Psycho-Motoric Hypererethism Syndrome with the Deficit of Attention

### SUMMARY

Theoretical outline relating to cluttering as to the unit that manifests the central speech disorder was combined with the results of researches conducted within this range among children with ADHD. The aim of these was to obtain the answer to the question related to the occurrence of the disorders of the fluency level and the speech pace in ADHD together with the opinion of coexisting disorders of the segmental and suprasegmental levels. It was used in the experiment. 'Test syllable test for the evaluation of speech disfluency' by Zdzisław Marek Kurkowski was used in this experiment.

**Key words:** cluttering, fluency speech disorder, central language disorder, psycho-motoric hypererethism syndrom with the deficit of attention (ADHD), 'The syllable test for the evaluation of speech disfluency'.

*Psycho-motoric hypererethism syndrom with the deficit of attention (ADHD)* is a disorder which has been quite often diagnosed among children for the last few years. People who show features of behavior characteristic of ADHD have difficulties in adapting themselves to required principles at the kindergarten and at school. They face various problems connected with difficulties both in learning and of emotional and social background connected with the inability of constructing correct social contacts with both peers and adults (Borkowska, 2007, 2008; Lipowska 2011; Wolańczyk & Kołakowski, Skotnicka, 1999; Wolańczyk & Skotnicka, Kołakowski, Pisula, 2001).

Children with ADHD syndrome are lively, they ask lots of questions, their acts and behaviour are characterized by the high level of chaos. These children have large problems with focusing on a given action because they are su-

sceptible to every, even the smallest stimulus coming from the surroundings. Both functioning of these children and their linguistic communication are not 'fully organized'. Thinking frequently outdistances speaking, but it sometimes happens that thinking does not follow speaking. The consequence of highly undisciplined processes of speech and thinking regarding these kids' spoken statements are disorders in the fluency of speaking.

In my article I have presented the results achieved from the investigations of the specific communication of children with ADHD and more precisely I concentrate my attention on the explication of one aspect taken from speaking disorder i.e. cluttering. The theoretical part deals with the concise description of the problem of cluttering, however I do not undertake the discussion over the question of ADHD, because this subject possesses wide literature and I think it is pointless just to quote it. The analysis of conducted investigations shows specific difficulties in communication with children with psychomotoric hypererethism and my intention was to show them in the hereby article. My intention is to show that the achieved results, at least within the little range, contributed to the recognition of linguistic principles which children with ADHD function with, and they could be helpful at work with children with such disorder. The person with ADHD needs understanding and support in her/his every day, frequently 'superhuman' activity.

## CLUTTERING – THE OUTLINE OF THE PROBLEM

The question of *cluttering* has been of interest for many researches for more than a hundred years, yet the problem is not generally well-known. The first one who separated cluttering from stammering was Adolf Kussmaul (1885, by: Tarkowski, Smul, 1988), who attributed the features of the speech neurosis to the both disorders. A. Kussmaul was convinced that stammering is simply the pure articulatory form of the disorder (laloneurosis), whereas cluttering is the functional aspect of the disorder (logoneurosis) (Tarkowski, Smul, 1988: 6–7). At the beginning of 20th century cluttering was recognised as paraphasy and treated as the form of the linguistic behaviour with characteristic, improper choice of words that express intentions, thoughts, and observations. The causes of such phenomenon were seen in the lack of the hearing concentration. Later, new causes were added regarding cluttering: too fast pace of speaking, spontaneous jumping from one subject to another while speaking as well as co-ordination disorder and the regulating function of speech and attention (cf. Tarkowski, Smul, 1988: 6–7).

According to definitions it is stressed that cluttering belongs to the group *central disorders of speech (language)* and among its reasons the delayed maturation of the central nervous system as well as its microinjures are enumerated and

it also suggests coexisting disorders: aural differentiating; dispraxy, undefined lateralisation (Kurkowski, 2007: 12), and also the deformations of the phonic substance in the suprasegmental level i.e. disharmony of rhythm, stress and pace of speaking (Kaczmarek 1981) and omissions, repetitions, slips of the tongue, reduction of consonantal groups and twisting syllables while reading and writing (Kostecka, 2006: 11).

Cluttering is characterized by: 'ignorance, small range of attention, disturbance of perception, articulating and formulating a statement. This is also the disorder of thought processes that are programming the speech and based on hereditary predispositions. Cluttering is the speech that manifests *the Central disorder of speech* (Central Language Imbalance), which affects all channels of communication, i.e. reading, writing, rhythm, melodiousness and usual behavior' (Weiss, following: Tarkowski, 1993: 157).

Kenneth O. Louis, Audrey R. Hinzman, M. Forrest Hull additionally added to the basic symptoms of cluttering (according to the largest frequency of occurrence): fast and irregular pace of speaking, incorrect clauses, disorganization of thinking, ignorance of the problem, repetition of words, sounds, syllables and phrases, weak understanding of statements, limitation of the concentration of attention and revisions (cf. Table 1). The authors show as additional symptoms the following ones: incorrect articulation, neurological damages, family cluttering, delayed development of the language, disorders of motor co-ordination, lack of school abilities, lack of social adaptation, repetition of phrases and fight with the disfluency of speaking (by: Tarkowski, 1999: 81–82).

Analyzing the literature dealing with the objective problem, it is hard to find the unambiguous answer to what causes cluttering. The majority of scientists point its genetic background (Weiss, Freund, Arnold, following: Tarkowski, Smul, 1988: 17–21). Although the attention is also directed on the correlation of the specific and unspecific influences, which are underlined in descriptions. The specific influence concerns families, where cluttering or stammering appear. However the unspecific influence is connected with low linguistic abilities (Tarkowski, 1988: 17–21), and – according to the nomenclature used in psychiatry – cluttering is connected not so much with genetics, but with the dysfunction passed on from generation to generation.

This conception is close to the conception presented by Weiss and Luchsinger (by: Surowaniec, 1996: 151, Tarkowski, Smul, 1988: 21–23), for whom cluttering is an individual disease entity, but a syndrome. The scientists who deal with this problem point out various kinds of the disorder. Table 2 presents the characteristics of various kinds of cluttering.

Table 1. The composition of cluttering symptoms

Symptoms	Description
Repetition	Monosyllabic repetitions; repetition of the first syllable in the word, which are the cause of spelling out and the inconstant pace of speaking.
Prolongations and interpolation of linguistic elements	Prolonging the final sound of the word in order to find proper words and interpolations e.g. yyy, eee, ah, uhm, etc. and embolophasias e.g. doesn't it, didn't they, etc.
Jamming	Pauses occurring before words as difficulties in choosing a proper word.
Respiratory dysrhythmia (primary and secondary)	Breath shallowing and accelerating; the disorders in the timbre of the sound and the lack of the rhythm perception – the monotonous statement.
Weak concentration and the narrow range of the attention	Insufficient control over own statement with numerous linguistic mistakes; rather bad results in the tests dealing with the aural attention.
Weak integration of thought processes	Thinking is before speaking and thinking does not follow speaking; mistakes in the internal speech – stereotypical, non-systematical and improper statement.
Articulatory difficulties	Difficulties appear both, when the pace is normal and accelerated; it is characterized by: <ul style="list-style-type: none"> <li>– ellipses – avoiding sounds, syllables and words;</li> <li>– heterotopia – exchange in the places of sounds;</li> <li>– metathesis – inversions in the sounds order ;</li> <li>– anticipation of sounds;</li> <li>– postposition of sounds;</li> <li>– repetitions of initial sounds;</li> <li>– slips of the tongue.</li> </ul>
Difficulties in reading and writing	Spelling; reading longer sequences of the text using short phrases – disappearance of the plot of the thought; quiet reading on the low level – difficulties in remembering of the reading content; loud reading on better level; better writing than reading; shapeless and irregular writing with repetitions, frequent transpositions, skipping of letters and numerous corrections.
Accelerated pace of speaking	Tachylalia in pure form – too fast speaking, which does not guide to disintegration of speaking and thinking
The lack the consciousness of the difficulties in speaking	Person unorganized, characterized by the lack of general independency, unaware of consequences of own behavior.

The source: own study based on : Tarkowski, Smul, 1988: 10.

Table 2. Kinds of cluttering

Types	Description
Motoric	– accelerated pace of speaking; – tendency to prolong elements of the statement.
Sensoric	– difficulties in finding necessary words; – weak perception; – difficulties in reading and writing with the disorders of aural attention and the lack of consciousness of this disorder.
Semantic	– the difficulty in formulating the semantic structure of the statement which results from the weak integration of thought processes and gaps in the internal speech.
Bradyarthrian	– slower pace of speaking; – tendency to prolong elements of the statement.
Tachylalian	– too quick pace of speaking.
Ideogenetic	– thinking outdistances the pace of speaking, both actions do not come at the same time.
Paraphrasic	– difficulties in choosing words; – monotonous statement; – disorder of rhythm, tone and the pace of speaking.
Conductively-perceptive	– difficulties in selection of words; – repetition of definite sounds, syllables, terms; – prolongation of the articulation; – monotony of statements – inability of verbalizing at the definite pace.

The source: own study on the basis: Surowaniec, 1996: 151.

## MATERIAL AND METHODS OF SCIENTIFIC EXAMINATIONS

The main questions of this article are the following: What is the level of disfluency in ADHD and what is its qualitative profile? Is this pathological disfluency? If it is, what entity of the fluency disorders of the speech can it be subscribed to?

Test syllable test for the evaluation of speech disfluency` by Zdzisław Marek Kurkowski (2007) was used in the experiment. It allows to estimate the level of speech disfluency that can appear in case of cluttering, aphasia or dysarthria. Thanks to this, one can also differentiate the developmental disfluency of speech from early childhood stammering. The method was verified at Institute of Physio-

logy and Pathology of Hearing in Warsaw. 300 stammering persons aged from 5 to 49 were subjected to this scientific investigation.

*The syllable test...* (2007) is a technique which can be used to examine both small children and adults. There are prepared four versions of the test depending on the age for children up to 7 years old; for children aged from 8 to 12 years old; for teenagers aged from 13 to 17 years old; for adults. The procedure of the examination deals with three tests checking: reading; dialogue; story (illustrated story) in which you should register the first one hundred syllables. In a specially prepared pattern there are marked fluently or disfluently spoken syllables: *the horizontal line* means that the syllable was expressed fluently; *the vertical line* means that the syllable was expressed disfluently; *v* over the space – inclusions such as *yyy*, *eee* appear. Next step was to count and interpretate the results. The evaluation of the kind of disfluently spoken syllables was taken into account for the need of the analysis as well as the level of the linguistic realizations of individual tests especially regarding segmental and suprasegmental realization of the statements was discussed.

At the beginning the destination group was composed of children with specific difficulties in learning and having school problems among them were children possessing medical certificates that indicate psycho-motoric hypererethism with the deficit of the attention. A group of forty children 10 and 11-year-olds was taken into account. They all came from towns of Upper Silesia and Małopolska districts. Pilotage investigations were conducted in 2010/2011. Tests were done with every single child individually with every child severally, and the records of them were recorded using the digital camera. Parents expressed written agreements concerning such an experimental program and the participation of their children in it. The recordings of the investigations of the speech underwent deep verification and due to final analysis eighteen children (six young girls and twelve boys), whose speech had features of cluttering, were chosen, of them nine children (seven boys and two young girls) had psychiatric diagnosis on psycho-motoric hypererethism with the deficit of the attention syndrome, the remaining group of children possessed opinions signed by the members of the Psychological and Pedagogical Counselling.

## RESULTS OF THE EXAMINATIONS

The syllable test dealt with three tasks: reading of the part of the text; participation in a dialogue and answering questions as well as constructing the statement to the presented illustrated story to the respondent. The results conducted on the basis of 'The syllable test...' among children with the psycho-motoric hypererethism with the deficits of the attention showed the occurrence of cluttering

at as much as 72% examined children and confirmed the occurrence of disfluency characteristic for cluttering, i.e.: fast and irregular pace of speaking, incorrect clauses, repetition of words, sounds, syllables and phrases, prolongations and interpolation of linguistic elements, jamming, respiratory dysrhythmia, articulatory difficulties, difficulties in reading and writing, weak concentration and the narrow range of the attention, weak integration of thought processes, mistakes in the internal speech, weak understanding of statements. Accelerated pace of speaking frequently goes with disfluency syndrome (average standard pace of speaking is 10-12 sounds per second, that is 4-5 syllables (Wierzchowska, 1972), meanwhile in the examined group this value was usually higher), and articulatory disorders in the segmental level.

Table 3 presents the opinion on the duration of statement and the quantity of syllables realized per one second in the following tests: reading, dialogue and illustrated story.

At none of the eighteen children three tests (of the same number of syllables) can be pointed but as many as seven children got similar results in these tasks. The quickest pace of speaking regarding syllables was shown in the reading test (72%) the slowest pace, however, is characteristic for spontaneous expressions that deals with the illustrated story (33%).

The most disfluently expressed syllables appeared in a dialogue (67%), then in the illustrated story (39%) and in reading (11%).

Abilities concerning active verbal participation in the dialogue was connected fundamentally with the accelerated pace of the speech and, not rarely, appeared with the raised intonation and the changing melodic line of the speech. The difference between the ranges of actions in discussed tasks based on this, that in the second test – *dialogue* was connected with answering various, thematic questions related to everyday actions, the observation of events from in the country and in the world which required from the respondents the efficiency of social, pragmatic and systematic nature staying in the correlation with their good cognitive level.

The majority of respondents, about 40%, related with the accelerated pace of the speech with the characteristic traces of the speech disfluency. The test, apart from checking the skill of answering questions, verified the efficiency of closing thoughts in logical syntactic units and pointed the range and quality of the applied vocabulary. Only 16% of the statements were coherent and logically related. 16% of the participants did well, however near 30% of the participants did not keep the coherent and logical course of the statement. They expressed themselves using clauses of 3–4 words and answered three and more questions simultaneously, deepening more and more in the chaos of their own thoughts.

In the task dealing with relating the illustrated story:

Table 3. Composition of duration of statement and the quantity of syllables realized on one second in the following tests: reading, dialogue and illustrated story

No.	Reading (CZ)		Dialogue (D)		Illustrated story (HO)		Level of speech fluency
	time (s)	number of syllables /s.	time (s)	number of syllables /s.	time (s)	number of syllables /s.	
1CH.	16	6.3	18	5.6	20	5	cluttering
2CH.	19	5.3	24	4.2	18	5.6	cluttering in CZ + HO
3DZ.	18	5.6	52	1.9	20	5	cluttering in CZ + HO
4DZ.	30	3.3	24	4.2	43	2.3	
5CH.	16	6.3	19	5.3	17	5.9	cluttering
6CH.	17	5.9	24	4.1	23	4.4	cluttering CZ
7DZ.	29	3.4	28	3.6	69	1.4	
8CH.	18	5.6	17	5.9	20	5	cluttering
9DZ.	30	3.3	27	3.7	38	2.6	
10DZ.	23	4.3	24	4.2	37	2.7	
11CH.	15	6.7	19	5.3	18	5.6	cluttering
12CH.	18	5.6	19	5.3	17	5.9	cluttering
13CH.	17	5.9	15	6.7	19	5.3	cluttering
14DZ.	25	4	64	1.6	35	2.7	
15CH.	16	6.3	41	2.4	20	5	cluttering in CZ + HO
16CH.	18	5.6	17	5.9	16	6.3	cluttering
17CH.	16	6.3	29	3.4	18	5.6	cluttering in CZ + HO
18CH.	17	5.9	20	5	40	2.5	cluttering in CZ + D

Source: study on the basis of own examinations

- 75% of participants express themselves correctly, using clauses of 4–6 words. They exchange and unite elements that are visible in pictures;
- 25% of participants realize statements incorrectly (they identify elements that are placed in pictures thoughtlessly).

Telling illustrated story, children based themselves first of all on the observation, imagination played smaller part what caused that children had enumerating objects and facts placed on illustrations mainly. The majority of participants used gestures or moved their heads, while relating what they could see in pictures .

Children taking part in three tests showed disfluency of speech, which could be seen in the speeches which spoke in repetitions, interposes, deformations, inappropriately applied pauses and occurrence of inexplicable syllables (Table 4).



Table 4. The composition of disfluently expressed syllables together with percentage composition of disfluency in reading, dialogue and illustrated story

No.	Reading (CZ)	% w CZ	Dialogue (D)	% w D	Illustrated story (HO)	% w HO	Average % of disfluency
1.	– repetitions – deformations	7	– prolonging – interposes – incomprehensible words	11	– interposes – repetitions – prolonging	5	7.7
2.	– deformations – repetitions	3	– interposes – prolonging – incomprehensible words	11	– interposes – prolonging	7	7
3.	– repetitions – prolonging – deformation – wrong way of breathing	3	– interposes – prolonging – pause – incomprehensible words	25	– interpositions – incomprehensible words – prolonging	14	14
4.	– deformations – repetitions	5	– interposes	2	– interposes	2	3
5.	– repetitions	7	– incomprehensible words – interposes	5	– prolonging – interposes	5	5.7
6.	–	0	– interposes – incomprehensible words	9	– incomprehensible words – pauses – interposes	10	6.3
7.	– repetitions	3	– interposes	1	– interposes	1	1.7
8.	– prolonging deformation –	5	– interposes	3	– incomprehensible words – interposes – prolonging	18	8.7
9.	– pause deformation	4	– incomprehensible words	5	– repetitions – pauza	4	4.3
10.	– repetitions	1	– incomprehensible words – prolonging – interposes	8	– prolonging – interposes	7	5.3

11.	– pause	2	– interposes – repetitions – incomprehensible words	14	– interposes – repetitions	8	8
12.	– repetitions – prolonging	2	– interposes – prolonging – incomprehensible words	18	– interposes	1	7
13.	– prolonging – pauza	3	– incomprehensible words – interposes	8	– interposes – repetitions	8	6.3
14.	– deformation	2	– prolonging – interposes	3	– prolonging – interpositions	7	4
15.	– repetitions – prolonging	1	– interposes – prolonging – incomprehensible words	16	– prolonging – repetitions – interposes	5	7.3
16.	– repetitions	2	– prolonging – interposes	21	– prolonging – repetitions – interposes	6	9.7
17.	– interposes – repetitions	2	– incomprehensible words	9	– interposes – incomprehensible words – repetitions	7	6
18.	– pause – repetitions	4	– prolonging – interposes	14	– interposes	4	7.3

The source: study on the basis of own investigations.

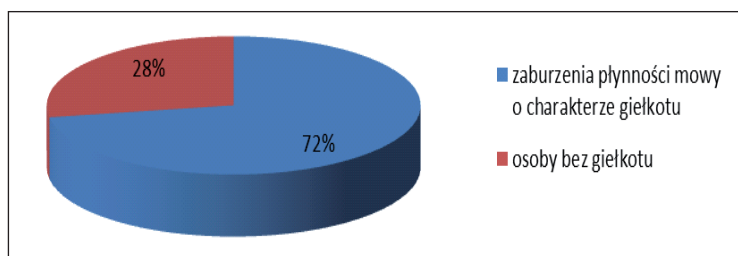
In the analyzed material there were the most interpositions (yy, ee, hmm) – 34, repetitions – 20 and the prolongations of syllables – 22. One child could not the breath correctly.

The analyze of disfluently expressed syllables contained in table 4, shows that in each test there are various mistakes in segmental and suprasegmental level. As regards reading these are repetitions and prolongations of syllables, pauses and deformations. There are significantly less interposes and incomprehensible syllables regarding the dialogue and the illustrated story .

## CONCLUSIONS

Theoretical outline relating to cluttering as the entity manifesting the central disorders of speech was compared with the received results of investigations conducted within this range among children with ADHD. Poor literature on the subject of cluttering among its symptoms enumerates both disorders on the suprasegmental and segmental levels as well as it points out the coexisting deficits of aural differentiating: dispraxy and others.

Results conducted on investigations show that the majority of hyperexcitable children taking the part in the experiment has the accelerated pace of speech.



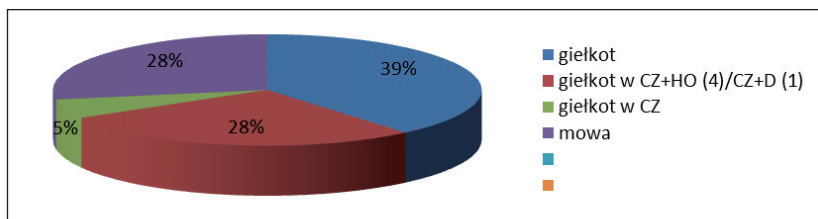
Graph 1. The level of the occurrence of cluttering in ADHD

Source: Study on the basis of own investigations.

28% persons with disorder of speech fluency of the cluttering characteristic

72% persons without cluttering

The quicker pace of speaking was more clearly seen during the test dealing with reading. Its character came out during the following tests: relating the illustrated story where the child first had to acquaint himself with presented pictures, and then he/she had to arrange a story to them as well as with the dialogue, when weaker concentration of attention and insufficient control of own statement could be seen.



Graph 2. The evaluation of the level of speech fluency in ADHD

Source: study on the basis of own investigations.

39% – cluttering; 28% – cluttering in CZ + HO (4)/CZ + D (1); 5% – cluttering in CZ

28% – speech

Both the told stories and answers given in a dialogue could not always create the logical whole, and their semantic and syntactic level had the marks of the limited linguistic code and showed deficits in this area.

Children taking part in the tests dealing with the dialogue and illustrated story applied one-word expressions and manifested the weak integration of thought processes. Thinking did not follow telling in some cases. The situation was particularly visible while reading, when some questioned persons tried to guess the read context, the repetitions of the words were also numerous (on the principle of analogy) as well as slips of the tongue and pieces of information not fitting to each other.

Analyzing the results gathered on the basis of the above material, it can be noticed that the large percentage of expressed syllables was not spoken fluently. Most of them can be noticed in a dialogue and the illustrated story. The most numerous are interpositions, repetitions and prolongations of syllables. Moreover deformations, incomprehensible syllables appear and they are the consequences of too quick pace of speaking and pauses that are not applied in proper places. Respiratory problems less appear. One could notice the monotonous statement regarding some children.

All the results of investigations connected with the occurrence of cluttering regarding children with ADHD are important from the point of view of general functioning of the child. The knowledge of the communication of children with such a compound disorder can cause that the methods of work will be worked out and that will enable their everyday communication with others. They will help them to develop better and will contribute to the improvement of talents and skills possessed by these children.

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