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Early Speech Therapy Diagnosis Questionnaire (KWDL) – A proposal for diagnosis of children aged from 6 to 36 months

SUMMARY

The present article discusses the problem of diagnosis in early speech therapy intervention in children aged up to three years. Because of the clearly growing need for speech therapy care in very small children the article is intended to help assess the successive stages of development of the infant and small child. The proposed questionnaire takes development norms for a given age into account, not only relating to speech. The Early Speech Therapy Diagnosis Questionnaire (KWDL [Polish abbreviation will be used in the text]) can be treated as a screening speech therapy test for children aged up to 36 months. Introductory studies confirm its diagnostic value.

Keywords: early speech therapy intervention, diagnosis of speech disorders.

INTRODUCTION

Intervention is a term that consists in joining in some situation in order to bring changes. Anomalies in the child's development are a situation that requires intervention to prevent or confine the effects of the largest disorders.

Early intervention is the field of many disciplines, inter alia medicine, psychology, speech therapy, or special pedagogy, as a preventive measure applied in the first three years of life. All over the world in the last twenty years we have seen a rapid increase in the interest in early intervention in children with speech disor-

ders. This applies both to the scientific description of the problem and the search for suitable ways of diagnosis and therapeutic management.

Contemporary medicine has developed so much in recent years that it can save many children affected by conditions that were fatal not long ago. This is also the case with premature infants: nowadays even a child at the stage of mid-prenatal development can survive. Unfortunately, saving such an infant is only the beginning of the long road facing the child, his/her parents, and the specialist team. Specialist, organized and interdisciplinary long-term help will be needed (Cytowska 2006; Ślęczek 2009).

The present article discusses the problem of diagnosis in early speech therapy intervention in children aged up to three years. Because of the clearly growing need for speech therapy care in very small children the article is intended to help assess the successive stages of development of the infant and small child. Our estimate shows that there is no generally adopted speech therapy manner of assessing the child's development which an early therapeutic intervention could be based upon.

That is why we propose a questionnaire which adopts developmental norms for age, not only for speech, as a criterion. This follows from the fact that it is impossible to separate speech development from the child's overall development, particularly in such spheres as perception, gross and fine motor skills, and social and emotional development (Bieńkowska 2012).

EARLY SPEECH THERAPY DIAGNOSIS QUESTIONNAIRE (KWDL) – PRINCIPLES OF DIAGNOSIS AND ASSESSMENT USING A SYSTEMATIZED TOOL

The period of the first three years is crucial to the rest of the whole life and we acquire totally new abilities in almost each month. That is why assessment should be taken into accord according to separate criteria in each year of life. The Questionnaire is divided into three main parts. Each covers the next twelve months in the child's life. The assessment pattern is as follows:

1. Assessment of child's development from 1–12 months of life:
   a) reflexes,
   b) speech and understanding it,
   c) perception,
   d) gross and fine motor skills.
2. Assessments of child's development from 13 to 24 months of life:
   a) speech and understanding it,
   b) gross and fine motor skills,

3. Assessments of child's development from 25 to 36 months of life:
   a) speech and understanding it,
   b) gross and fine motor skills.

An element complementing the information about the child should be the questionnaire for parents, which needs to contain basic information: personal details, age, etc., and the information about the health condition, family, or the environment in which the child is developing. Some items in the questionnaire are completed based on the interview with a parent. Small children, when interacting with an unknown researcher often do not fully show their skills.

The duration of testing of one child does not exceed 45–60 minutes depending on the degree of the child's cooperation.

Another component of the survey completed by the parents of children who turned 18 months, is M. Smoczyńska's "Short Speech Development Inventory" (KIRM-A and KIRM-B [Polish term]) (www.mp.pl), which serves to approximately assess the vocabulary of children aged from 18 to 36 months.

In order to compare the results obtained with the mean value obtained by children, the "Introductory abbreviated norms for KIRM-A and KIRM-B" should be utilized.

Moreover, in each of the studied age brackets the structure and functioning of the articulatory apparatus should be assessed (cf. the Table appended after the 25 to 35-months-of-life questionnaire). The ways of breathing and swallowing also need to be assessed. The manner of feeding and the period of using the teat/bottle are also important (Łada 2012)

Full testing in a particular age bracket is conducted at the end of the 1st, 2nd, and 3rd years of life.

EARLY SPEECH THERAPY DIAGNOSIS QUESTIONNAIRE (KWDL) IN THE 6 DO 36 MONTHS AGE BRACKET

1st year of life

reflexes	present + / absent -	remarks
Mouth opening reflex (by the 4th mo.)		
Sucking reflex		
Rooting reflex (by the 3rd mo.)		
Vomiting reflex		

Bite reflex (by the 8th mo.)		
Orbicularis oris reflex (by the 3rd mo.)		
Mandibular reflex		
Chewing reflex (from ca. 11th mo.)		

Speech and understanding							
Cooing (by the 6th mo.)							
Babbling							
Loud laughter (from the 4th mo.)							
Sound signals in the form of meaningful syllables (9th mo.)							
Responds to his/her name (10th mo.)							
Initiates dialog by babbling (10th mo.)							
When asked, s/he looks for the familiar person or familiar object by turning his/her head (10th mo.)							
Carries out simple commands (12th mo..)							
Takes part in plays „a kuku [peek-a-boo]”/ „kosi, kosi – łapci [Clap, clap, little hands]” (12th mo.)							
Pronounces vowels: (12th mo.)	a			e			
Pronounces consonants : (12th months.)	m	b	n	t	d	i̯	

Perception	**Yes +/ Non -**	**Remarks**
Responds with dislike to intense light and loud voices		

Fixes his/her gaze on a face and follows it (2nd mo.)		
Stops moving in reaction to sound (4th mo.)		
Smiles back to a smile (4th mo.)		
Seeks the source of sound (5th mo.)		
His/her eyes follow the object that s/he has dropped (6th mo.)		
Is interested in his/her reflection in the mirror (7th mo.)		
Imitates adult activities – (9th mo.)		
Touches details of an object with his index finger (11th mo.)		

Gross and fine motor skills		
Raises his/her head easily and keeps it up (3rd mo.)		
Plays with his/her hands (4th mo.)		
Takes hold of the toy handed and puts it from one hand into the other (6 months)		
Turns actively from his/her back onto this/her belly (7th mo.)		
Sits on his/her own (8th mo.)		
Stands on his/her own holding on to something (10th mo.)		
Pincer grip (10th mo.)		
Points his/her finger at sb/sth (11th mo.)		
Crawls on all fours (11th mo.)		

Walks held by one hand (12th mo.)		

2nd year of life

Speech and understanding	Yes +/ No -	Remarks
The child uses the words „mama [mom]" , „tata [dad]" to refer to persons (13th mo.)		
Speaks at least three words that have meaning (15th mo.)		
Speaks a word with two different vowels e.g. „mamo" (16th mo.)		
Can show familiar objects in a picture (16th mo.)		
When asked, s/he names the familiar object (17th mo.)		
Signalizes a wish with words (e.g."da"[give], „am [eat/ hungry]") (18th mo.)		
Can utter at least 24 words (girls)/12 words (boys) from the questionnaire (18th months)		
Repeats a word according to a template e.g. tama, doba (19th mo.)		
Indicates 3 parts of body (20th months)		
First two-word phrases (20th moth)		
Understands simple commands and prohibitions (22nd mo.)		
Understands words and knows the meaning of „duży [large/big" „ciężki [heavy]" e.g. s/he correctly executes the command: Give me the large ball (22nd mo.)		

Apart from the noun there also appear:	verb		adjective		numeral		pronoun		preposition		adverb	
Uses his/her name when talking about him/herself (23rd mo.)												
Attempts to inflect words (24th mo.)												
Pronounces vowels:	a		e		i		o		u		y	
Pronounces consonants:	p	b	n/ń		m	d	t		k	i̯	ś	
Speaks at least 58 words (girls) /34 words (boys.) from the questionnaire (24th mo.)												

Gross and fine motor skills		
Walks on his/her own (13th mo.)		
Squats and bends down (14th mo.)		
Uses the spoon in an awkward way (14th mo.)		
Scribbles (14th mo.)		
Drinks from a cup (15th mo.)		
Climbs (15th mo.)		
Runs (16th mo.)		
Takes several steps backwards (16th mo.)		
kicks/throws a ball (17th mo.)		
Spears food with a fork (17th mo.)		
Makes a tower out of building blocks (18th mo.)		
Twists off lids (21st mo.)		
Strings large beads (22nd mo.)		
Eats on his/her own, getting dirty to a slight degree (23rd mo.)		
Jumps up (23rd mo.)		
Stands on one foot (24th mo.)		
Takes off and puts on some items of clothing (24th mo.)		

3rd year of life

Speech and understanding	Yes +/ No -										Remarks
Apart from the noun there also appear:	verb		adjective		numeral		pronoun		preposition	adverb	
Three-word sentences – in the children's language (25th mo)											
Understands the use of the objects around him/her „comb for combing" (26th mo.)											
Speaks about him/herself using the form „I" (26th mo.)											
First four-element sentences (27th mo.)											
Uses the pronoun „mój [my]", „your [twój]" (28th mo.)											
Uses the plural (29th mo.)											
Five-element sentences (30th mo.)											
Uses interrogative forms „why", „what for" (31st mo.)											
Knows whether s/he is a boy or a girl (32nd mo.)											
Can repeat a sentence made up of five simple elements e.g. „Mother bought many candies yesterday" (32nd mo.)											
Distinguishes between the meaning of „długi-krótki [long/short]" e.g. s/he correctly executes the command "Give me a long stick" (34th mo.)											
Can give the antonym of a word illustrated with an example" ice is cold and fire …" (36th mo.)											
Speaks at least 160 words (girls)/145 words (boys) from the questionnaire (36th mo.)											
Pronounces all vowels (except nasal ones)											
Pronounces the following consonants:	p	b	m	f	v	t	d	n			
	p'	b'	m'	f ,	v'	k'	g'	ń			
	l	ś	ź	ć	k	g	x	i̯	ś		

Gross and fine motor skills		
Stands on one foot (24 mo)		
Twists off lids with top grip (24th mo.)		
Makes a tower using eight building blocks (26th mo.)		
Washes and wipes his/her hands (28th mo)		
Holds scissors correctly and cuts at least once (28th mo.)		
Climbs up/down the stairs alternately (30th mo.)		
Catches the ball from the distance of 2 meters (31st mo.)		
Unfastens buttons (31st mo.)		
Draws a vertical line after presentation (32nd mo.)		
Jumps over an object 20 cm wide without touching it (34th mo)		
Draws a closed circle (35th mo.)		
Takes off and puts on clothes on his/her own after being instructed (36th mo.)		
Reproduces familiar activities in thematic games (36th mo.)		

Structure and functioning of the articulatory apparatus	
Lips	
Palate	
Tongue	
Tongue frenulum	
Teeth/occlusion	

The KWDL was devised based on such studies: "*Monachijska Funkcjonalna Diagnostyka Rozwojowa – pierwszy, drugi i trzeci rok życia* [Munich functional developmental diagnosis for the first, second, and third year of life.]" (Hellbrugge 1994), "*Karty diagnozy 10 etapów rozwoju dziecka* [Diagnosis sheets for 10 stages of child's development]" (Cieszyńska 2008), „*Diagnoza neurologopedyczna niemowlęcia od 1 do 12 miesiąca. Ocena odruchów orofacjalnych oraz umiejętności istotnych dla rozwoju mowy* [Neurologopedic diagnosis of infant from 1–12 months of life. Assessment of orofacial movements and skills essential for speech development]" (Machoś 2011) and "*Wybrane metody diagnozowania i prognozowania rozwoju dziecka do lat trzech* [Selected methods of diagnosis and prognosis of child's development up to three years of age" (John-Borys 1997).

The questionnaire is compiled in such a way that the skills tested are arranged in ascending order from the simplest, which a two to three-months old baby should display, to the more complicated ones observable in the 36-months-old child. The information given in brackets shows the maximum age by which a reflex should disappear or an activity should fully develop.

Many subsections (particularly in the youngest children) can be determined by observing the free activity of the child while playing, eating, or drinking. Moreover, to assess reflexes, the rules described by A. Regner can be applied (regnerlogopedia.pl). In order to make an assessment of communicative activities and behavior, a procedure should be developed, which should have the form of playing with the child.

ASSESSMENT

Because the testing is not standardized, its qualitative character should be taken into account. Recommendations for speech therapy treatment should be the results that diverge in test scores for speaking and understanding by more than three to six months. Similar occurrences of negative scores in other spheres (depending on the age and types of delays relative to the anticipated developmental norm) may prove the existence of different disorder types and require further observation and diagnosis by other specialists as well.

It can be assumed that the proportionate and adequate development in all spheres except for speech may be the grounds for diagnosis towards disorders of the type: alalia or SLI. (Czaplewska 2012) Delayed development in all spheres: speech, gross and fine motor skills, and emotional development may provide grounds for further observation or finding overall developmental disorders or oligophrenia.

Out of the skills listed in the questionnaire the following should be regarded as particularly significant:

• fixing gaze on a person's face (this ability should already be displayed by a two-months old baby),

• recognition of and response to facial expressions (this ability occurs in the fourth month of life),

• pointing to details with the index finger (ca 11th month),

• alternate relationships (an apparent dialog through babbling ca. 6th month, participation in games – "peek-a-boo" ca. 12th month).

If a year-old or older child does not execute the foregoing behaviors, i.e. s/he does not establish eye contact or verbal contact with the testing person, and additionally s/he displays features of specific behaviors and/or absence of noticeable relationships with the caregiver (attachment), further observation and inspection by specialists in different fields is recommended in order to assess his/her development from the perspective of occurrence of potential autism-related disorders. (Komender 2012)

Owing to the early detection of developmental anomalies in the child by using the questionnaire it is possible to start therapy comparatively early before the abnormal patterns become established and intensified. .

PRELIMINARY STUDIES USING THE KWDL

The KWDL was tested in a pilot study only on a small group of children (thirteen), They were both girls (6) and boys (7). The age bracket of the subjects (the age counted from the date of birth to the date of testing) ranged from 7 to 36 months. Twelve of the studied children had no diagnosed illness that might influence their development. The only child with a diagnosed disability was an eleven-months-old boy with Down syndrome.

Testing was conducted in the children's familiar environment (most often at home) in the presence of a parent or caregiver. It usually lasted from 45 to 60 minutes. The first 10-15 minutes was spent talking with a parent, establishing a rapport with the child and on general observation. When the child had already become accustomed to the researcher's presence, the main part of the testing took place.

Children up to 12 months of life were tested for the reflex sphere in the first place because reflexes that are not extinguished prevent the development of higher functions. Perception and gross and fine motor skills were then assessed. The testing of vocalization, speech, and understanding of it were the last but one stage of the study. The plan of conducting the testing was based on the observation that after some time spent with the researcher the child readily establishes a rapport and s/he vocalized far more intensely. The last part of the study was to check the structure and functioning of the articulatory apparatus: children usually responded to this procedure with dislike, pushing the researcher away, and even crying.

In children aged 13 months or more the testing started from general observation of the child, his/her motor abilities, whether the child walks, runs, and how s/he copes with eating or getting dressed. Of high diagnostic value was the researcher's presence during the child's meal, changing clothes, or basic hygiene, (e.g. washing hands.). In most cases the parents consented to this. Another element of the testing was to initiate playing together with a ball or blocks. The child was also encouraged to move around to music, to sing, draw, and copy the shapes provided. The play included diagnostic items from the Questionnaire. The assessment of the child's speech and vocabulary was based on observation, but the child was additionally stimulated to talk e.g. about toys, favorite food, fairy stories, etc. (particularly in children after the 24th months of life). The presence and pronunciation correctness of the phones appropriate to the age was tested by jointly examining and naming pictures in the picture questionnaire.

An important element that impacted the assessment of the vocabulary inventory was also the KIRM (Short Speech Development Inventory) questionnaire completed by the parents of children who turned 18 months. The parents filled it in during the testing and directly afterwards.

The study usually ended with the assessment of the structure and functioning of the articulatory apparatus, and, if necessary, with a brief assessment of phonemic hearing.

The results obtained by the children during the tests (excluding two children) were within the range of the developmental norm. Early speech therapy intervention was applied in the case of two children selected in the questionnaire testing.

A three-year old girl received a speech therapy treatment in order to elicit the missing phones (k, g). Within barely three months, the exercises managed to elicit the phone and introduce it into words, with substitutions appeared up to six moths.

The eleven-months old boy with Down syndrome was administered some elements of Castillo-Morales massage. An important element in the boy's therapy was also the proper positioning while feeding, the choice of feeding accessories, and food texture to stimulate the speech apparatus (Castillo Morales 2009).

CONCLUSIONS

At present there is no instrument available in the market that would assess the child's speech and at the same time other aspects of his/her development that often have a significant effect on the selection of therapeutic strategies. The Early Speech Therapy Diagnosis Questionnaire (KWDL) presented above can be treated as a screening test for children up to 36 months of life. Preliminary studies confirm its diagnostic usefulness.

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