Assessment of the capacity to create and understand wordbuilding structures by a child with minor intellectual disability

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The research conducted on language of children with intellectual disability (ID) shows that they exhibit language dysfunctions on every level of language. Up to now, literature did not include linguistic studies concerning issues of wordbuilding in the language consciousness of pre-school children with intellectual disability. The objective of the article is the assessment of the level of wordbuilding competences of a child at pre-school age with minor intellectual disability (MID) concerning the creation and comprehension of nominal derivates in the area of selected wordbuilding categories (case study). In addition, the author wishes to stress that the assessment of the level of wordbuilding competences should be a component on comprehensive logopaedic diagnosis.

KEY WORDS: intellectual disability, word formation, word formation competences

1. Wordbuilding competence tests

In foreign-language literature, a popular experiment aimed at testing the level of acquisition of wordbuilding rules by children was the *WUG study* conducted by Jean Berko¹ (the author tested

¹ J. Berko, *The child’s learning of English morphology*, “Word” 1958, no. 14, pp. 150–177.
capacities spanning the creation of nominal diminutives, names of actors in activities, nominal adjectives and compound nouns). Wordbuilding structures were also handled e.g. by Eve Clark and Ruth Berman. All studies concerned exclusively children in the intellectual norm.

In Poland, wordbuilding in linguistics was analysed by e.g. Maria Chmura-Klekotowa (she collected material made up of 5000 examples of wordbuilding neologisms), Maria Zarębina (described the creation of the child’s language system and conducted an analysis of texts created by children at pre-school age and younger), Halina Zgółkowa (described the functions of neologisms in the development of language in preschool-age children), Ewa Muzyka-Furtak (analysed and assessed the capacities to comprehend and create wordbuilding structures by deaf children), and in terms of psycholinguistics and psychology – e.g. by Ewa Haman and Amelia Dzi-
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urda-Multan. All quoted studies were conducted exclusively among children in the intellectual norm.

Up to now, subject literature did not include broad linguistic studies dealing with wordbuilding structures in the consciousness of children with ID. Issues concerning wordbuilding in children with MID are at the stage of preliminary development.

The conducted research on language of children with ID shows that they exhibit language disorders on every level of language, hence, in the area of wordbuilding. The acquisition of wordbuilding rules and categories is closely tied to one’s cognitive categories. Even though relations in the acquisition of cognitive and wordbuilding categories are noted, they were not analysed in detail until now – attempts were only made to discern between concept categories that are expressed in the Polish language by wordbuilding. Beside close ties between the acquisition of wordbuilding rules and cognitive functioning, mechanisms and techniques of derivation, which

8 A. Dziurda-Multan, Dziecięce sposoby tworzenia nazw, Wydawnictwo KUL, Lublin 2008.

9 The researchers described language disorders in children with ID, however no study takes on issues concerning wordbuilding competences. Researchers working with the development of speech in children with ID include: A. Szuniewicz (1967), E. Minczakiewicz (1984, 1989, 1993a, 1993b, 1994), S. Sadowska (2006), L. Bleszyńska (2006), Z. Tarkowski (1988), H. Nadolska (1993, 1994), J. Balachowicz and J. Paluszewski (1995), A. Rakowska (2003), U. Jęczeń (2005, 2007), M. Michalik (2006, 2011), K. Kaczorowska-Bray (2013, 2017), D. Krzemińska (2012), J. Bleszyński (2013, 2016), A. Wątorek (2014).

10 R. Marciniak-Firadza, Kilka uwag o potrzebie badań kompetencji słowotworczych dzieci z niepełnosprawnością intelektualną w stopniu lekkim „Interdyscyplinarnie Kon-teksty Pedagogiki Specjalnej” 2016, no. 14, pp. 29–51.

11 J. Bleszyński, K. Kaczorowska-Bray (ed.), Diagnoza i terapia logopedyczna osób z niepełnosprawnością intelektualną, Wydawnictwo Harmonia Universalis, Gdańsk 2012.

12 B. Szymanek, Categories and categorization in morphology, Wydawnictwo KUL, Lublin 1988; R. Grzegorczykowa, B. Szymanek, Kategorie słowotwórcze w perspektywie kognitywnej, [in:] Współczesny język polski, ed. by J. Bartmiński, Wydawnictwo UMCS, Lublin 2001.
serve the creation of new words, are significant for the purpose of analyses of specific properties of acquisition of wordbuilding categories.\textsuperscript{13}

2. Speech development in children with MID

Children with MID go through the same stages of speech development as children in the intellectual norm. In children with MID, however, it is characteristic for the individual stages to appear at a reduced pace and last longer than in their peers in the norm.\textsuperscript{14} The majority of preschool-age children is able to master the phonological, semantic and syntactic systems of a language, and thanks to the language resources at their disposal, they are able to initiate and maintain dialogue (make social contacts).\textsuperscript{15} Children understand statements by adults well.

The delayed development of speech in children with MID is expressed, among others, by the following:

\begin{itemize}
  \item persistent incorrect articulation,
  \item slow pace of vocabulary acquisition,
\end{itemize}

\textsuperscript{13} A. Heinz, \textit{Fleksja a derywacja, „Język Polski”} 1961, no. XLI(5), pp. 343–354.

\textsuperscript{14} A. Rakowska, \textit{Język – komunikacja – niepełnosprawność. Wybrane zagadnienia}, Wydawnictwo Naukowe Akademii Pedagogicznej, Kraków 2003; E. Kulesza, \textit{Rozwój poznawczy dzieci z lekkim i umiarkowanym stopniem upośledzenia umysłowego – diagnoza i wspomaganie. Studia empiryczne}, Wydawnictwo APS, Warszawa 2004; K. Kaczorowska-Bray, \textit{Zaburzenia komunikacji językowej w grupie osób z niepełnosprawnością intelektualną}, [in:] \textit{Diagnoza i terapia logopedyczna osób z niepełnosprawnością intelektualną}, ed. by J. Błeszyński, K. Kaczorowska-Bray, Wydawnictwo Harmonia Universalis, Gdańsk 2012, pp. 36–64.

\textsuperscript{15} H. Nartowska, \textit{Opóźnienia i dysharmonie rozwoju dziecka}, Wydawnictwo WSiP, Warszawa 1980; A. Rakowska, \textit{Język – komunikacja – niepełnosprawność. Wybrane zagadnienia}, Wydawnictwo Naukowe Akademii Pedagogicznej, Kraków 2003; K. Kaczorowska-Bray, \textit{Zaburzenia komunikacji językowej w grupie osób z niepełnosprawnością intelektualną}, [in:] \textit{Diagnoza i terapia logopedyczna osób z niepełnosprawnością intelektualną}, ed. by J. Błeszyński, K. Kaczorowska-Bray, Wydawnictwo Harmonia Universalis, Gdańsk 2012, pp. 36–64.
– reduced verbal activity,
– difficulty constructing correct sentence structures,
– persistent agrammatisms,
– difficulty speaking spontaneously on a given subject.\textsuperscript{16}

The vocabulary of a child with MID is poor in abstract terms, as these people do not understand their meaning, hence, they do not take them up into their vocabulary resources.

3. Methodology and subject of own research

The present article constitutes a qualitative analysis of statements by a single child, and it is but an introduction to further extensive research on wordbuilding competences of pre-school children with MID.

3.1. The characteristics of the analysed child

The girl was born in 2012. On the day of the assessment, she was six years and 10 months old. On the basis of a psychological examination, using the \textit{WISC-R} (\textit{Wechsler} Intelligence Scale for Children), it was concluded that the intellectual functioning of the child hovers around mild intellectual disability. The medical statement concerning the need for special education concluded that the MID is most probably the result of the numerous illnesses that the child was diagnosed with. The supplied hospital medical information sheets of the girl indicate that her health significantly affects her cognitive and intellectual development. After an MRI examination of the head, the stabilisation of the optic nerve glioma and of the dysplastic changes within the scope of von Recklinghausen disease was found to have become stable. In addition, the child remains under the care of a neurological practice due to epilepsy, and of a vascular

\textsuperscript{16} A. Rakowska, \textit{Język – komunikacja – niepełnosprawność. Wybrane zagadnienia}, Wydawnictwo Naukowe Akademii Pedagogicznej, Kraków 2003, p. 127.
disease specialist due to the condition after deep vein thrombosis of the right extremity. The child attends an integration pre-school, also attended by children in the norm and with specific education needs\(^\text{17}\) (e.g. children with MID or with autism).

### 3.2. Object of research

The object of the analyses are suffix-based noun derivatives created on the basis of various parts of speech (e.g. nouns, verbs and adjectives), representing individual wordbuilding categories. Using classic and still valid linguistic works by Renata Grzegorczykowa and Jadwiga Puzynina\(^\text{18}\), the article analyses exclusively mutation derivatives in the following wordbuilding categories: names of activity actors, names of tools, places, products and objects of activities, names of entities bearing specific properties. Names of sets, inhabitants and family relations were omitted due to low productivity in colloquial speech.

### 3.3. Research tool

Due to the fact that there are no databases of questionnaires, surveys, tests or developed experimental models for testing of wordbuilding competences of children with MID, the study required the creation of a wordbuilding questionnaire on the basis of

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\(^{17}\) The author purposefully uses the term *specific needs* in lieu of the term common in literature – *special needs* – thus argumenting in favour of Marzena Zaorska. The researcher states that the term *special* is not fitting, because the global needs of every person are the same, and this *speciality* applies solely to the scope, methods and forms of fulfilment of these needs. In addition, this term is less stigmatising (M. Zaorska, *Aktualne problemy edukacji i rehabilitacji osób z niepełnosprawnością sprzężoną*, „Niepełnosprawność” 2012, no. 7, pp. 9–24).

\(^{18}\) R. Grzegorczykowa, J. Puzymina, *Problemy ogólne słowotwórstwa. Rzeczownik*, [in:] *Gramatyka współczesnego języka polskiego. Morfologia*, ed. by R. Grzegorczykowa, R. Laskowski, H. Wróbel, Wydawnictwo Naukowe PWN, Warszawa 1999, pp. 361–468.
already developed references.\textsuperscript{19} It was composed of two parts – the first one, used to test comprehension, and the second one, used to test the production of wordbuilding structures. The skills in the comprehension of structures was tested using the technique concerning the formulation of a wordbuilding paraphrase, and the skill of production of structures using the technique entailing the recognition of derivatives – on the basis of the presented wordbuilding paraphrase.

3.4. Test procedure

The test was conducted in a quiet room, without the participation of third parties. Due to difficulties in longer-term attention focus in children with ID, and in order to eliminate the probability of a sudden drop in motivation due to fatigue, the test was subdivided into two meetings. According to the rules of skill acquisition in course of language acquisition, understanding structures precedes creation. The research work, however, was conducted in the reverse order. During the first diagnostic session, tested was the skill of production, and during the second – the ability to comprehend. The break between the assessments was at least two weeks, preventing the emergence of the child remembering the wordbuilding structures or modes of their creation discussed during the first meeting, and preventing them from repeating the same formants and analogous modes of production during the second session. The entire test lasted 40 minutes. The tasks from the questionnaire were read to the child, who would then respond. During the test, every effort was made for the child to have the best possible work conditions and to feel free; attempts were made to encourage her linguistic creativity, and she was encouraged to produce wordbuilding structures. The

\textsuperscript{19} During development of the questionnaire, wordbuilding assessment methods were used as described and developed e.g. by E. Muzyka-Furtak (2010). The author worked with wordbuilding structures in the language consciousness of deaf children.
study proper was preceded by a so-called “wordbuilding warm-up”, which was meant to help the child comprehend the tasks from the questionnaire and invoke their wordbuilding creativity.

4. Analysis of the material

4.1. Assessment of comprehension of wordbuilding structures belonging to the individual wordbuilding categories – the capacity to produce wordbuilding paraphrases

Comprehension (decoding) is a formal-semantic analysis of structures; decoding the meanings of the constituent components of a formation; interpreting wordbuilding structures, according to social conventions and own experiences; the ability to produce a wordbuilding paraphrase indicating semantic reactions between the basic word and the derivative, thanks to the indication of the constituent components of a formation.20

The wordbuilding paraphrase is an analytical statement equivalent to the derivative, which contains the root word.21 The ability to create a wordbuilding paraphrase is identical to the ability to form sentences. Children with MID, due to dysfunctions of the syntactic efficiency of language, have trouble building correct sentences. This translates directly into the skill of creation of wordbuilding paraphrases. This does not mean, however, that persons with MID are not able to build paraphrases at all. They make efforts to define derivatives and discern their meaning. A confirmation of this thesis are examples collected during this assessment, which were analysed.

20 B. Kreja, Słowo twórstwo a problem tworzenia nowych wyrazów, [in:] Z zagadnień ogólnych polskiego słowotwórstwa. Studia 3, ed. by B. Kreja, Wydawnictwo Uniwersytetu Gdańskiego, Gdańsk 2000, p. 192.

21 R. Grzegorczykowa, J. Puzynina, Problemy ogólne słowotwórstwa. Rzeczownik, [in:] Gramatyka współczesnego języka polskiego. Morfologia, ed. by R. Grzegorczykowa, R. Laskowski, H. Wróbel, Wydawnictwo Naukowe PWN, Warszawa 1999, p. 371.
During the formulation of the paraphrase, the patient used explications of the structural meaning (without components of the real, actual meaning), for instance:

| Polish-language original | Approximate English translation |
|--------------------------|---------------------------------|
| Jadalnia – tam się je    | Eating room – where you eat    |
| Samotnik – to jest taki bardzo, bardzo, bardzo samotny | Loner – he is so very, very, very lonely |
| Brzuchacz – to jest taki, co ma brzucha | Big-belly – someone with a belly |
| Wąsacz – kto ma wąsy (a ja widziałam prawdziwego Mikołaja!) | Moustache-face – one with a moustache (and I saw the real Santa Claus!)|

The material used one example of use of explication of the structural meaning with components of the real meaning, for instance:

| Polish-language original | Approximate English translation |
|--------------------------|---------------------------------|
| Pralnia – to miejsce, gdzie nosi się ubrania, no i zamyka się, no i pierze się | Laundry room – it is a place where you wear clothes, and where you close, and where you do laundry |

Most commonly, however, during decoding, the patient indicated the root word with a component of the real meaning, for instance:

| Polish-language original | Approximate English translation |
|--------------------------|---------------------------------|
| Sprzedawca – sprzedaje nam jakieś tam mleko, ogórki, pomidory, sałatę, chrupki | Seller – somebody who sells us things like milk, cucumbers, tomatoes, salad, corn puffs |
| Sprzątaczka – która sprząta; może sprzątać podłoge, okna, kurze, szybę żeby była czysta (moja mama myje wszystko, nawet szafy) | Cleaning lady – who cleans; she can clean the floor, the windows, the dust, the window, so that it is clean (my mum washes everything, even wardrobes) |
| Nauczyciel – uczy pływać dzieci, skakać, skakać wysoko | Teacher – teaches children to swim, to jump, jump high |
| Śpiewak – śpiewa wlazł kotek, ogórek kiszony (ogórek, ogórek zielony ma garniturek…), może śpiewać pieski małe dwa, jagodki | Singer – sings row row, bus wheels (the wheels on the bus…), he can sing itsy bitsy spider, head & shoulders |
| Słuchacz – że słyszy burzę, wiatr, deszcz, błyskawicę | Listener – that they listen to the storm, wind, rain, lightning |
| Skakanka – do skakania | Jump-robe – for jumping |
| Drukarka – do drukowania, wychodzą karty, napisy | Printer – for printing, sheets, writing comes out |
| Pisak – to pisze się literki | Pen – you can write letters |
A different mode of interpreting wordbuilding formations in a child was also the identification of the root word, and, accordingly – linking the meaning of the derivative with the meaning of the root word (created with its use). In this case, the meaning of the root word is more important for the meaning of the given word than the meaning of the formant, e.g.:

Leżak – leży się
Czytanka – czyta się

In one of the examples, the giel used the verb root with a common root morpheme, however, with a different prefix, e.g.:

Grzejnik – do ogrzania domu
Heater – to heat the house

At times, the child would indicate the lexical meaning of the derivatives. Focusing exclusively on reading the real meaning, in the definition she omitted the root word, e.g.:

Lekarz – bada serce, nogi, plecy, uszy, brzuch; wbija zastrzyki, a ja tak bardzo nie lubię zastrzyków, no bo boli
Doctor – he examines the heart, the legs, back, ears, stomach; he makes injections, and I don’t like injections a lot, because they’re painful

Piłkarz – to jak gole strzela
Footballer – how he scores

Odkurzacz – do sprzątania podłogi
Vacuum cleaner – for cleaning the floor

One of the modes of interpretation of derivatives were also associations. They most commonly stemmed from the fact that the child associated wordbuilding structures with situations she experienced in life – when recognising the meaning of derivative words, she based her work on her own experiences, for instance:
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Przymierzalnia – ubrania kupować
Fitting-room – buying clothes
Mrożonka – to jest zimno, zimno tam jest
Frozen food – it’s cold, it’s cold there
Grubas – on jest zabawny
Fatty – he’s funny
Lodowisko – można tam śmieci wyrzucać
Skating rink – you can throw away trash there

The last example is an expression of relationship with the word śmieciowisko [landfull] – hence the interpretation of the derivate.

4.2. Assessment of the skill of production of wordbuilding structures in the individual wordbuilding categories – the skill to produce structures on the basis of a wordbuilding paraphrase

Production is formal-semantic synthesis of properties making up the structure’s meaning; encoding meanings into the wordbuilding structure; production referring specific entities from one’s own vocabulary that are formally and semantically tied to the defined set of semantic properties; this takes place on the basis of a wordbuilding paraphrase and a set of semantic properties that were extracted from the structural meaning of the formation.²²

Throughout the majority of the test, the patient created wordbuilding structures belonging to various wordbuilding categories correctly, for instance:

Pan, który maluje – malarz
One who paints – painter
Pan, który pracuje w kuchni – kucharz
One who works in the kitchen – cook
Urządzenie, które służy do kierowania pojazdów – kierownica
Device used to control cars – steering wheel
Urządzenie, które służy do prania – pralka
Device used for cleaning laundry – washing machine
Pokój, gdzie się sypia – sypialnia
The room where one sleeps – bedroom
Miejsce, gdzie ludzie piją kawę – kawiarnia
Place, where people drink coffee – cafe

²² J. Puzynina, Procesy nadawania i rozumienia komunikatów językowych a słowotwórstwo, „Prace Filologiczne” 1970, vol. XX, pp. 59–64; E. Muzyka-Furtak, Konstrukcje słowotwórcze w świadomości językowej dzieci niesłyszących, Wydawnictwo Uniwersytetu Marii Curie-Skłodowskiej, Lublin 2010, p. 81.
The collected material also includes structures used through application of wrong formants – this stems from insufficient acquisition of the rules of formant repartition, despite the fact of mastering basic skills of creation of word formations, for instance:

For a child with MID, the addition of random formants characteristic for the category of actors, to intuitively derived root words, does not constitute any changes in meaning – this shows how rules of grammar are abstract for a child with ID, if they do not understand them.

Noteworthy are also structures created with a change of the root words, however, semantically and not formally related, with the root word used in the explication. The patient recalled, on the basis of association, words related to the components of the paraphrase that she understood, e.g.: 
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Rzecz, która budzi ludzi rano – kogut
Urządzenie, które służy do kopania – lopata
Przyrząd, który służy do otwierania butelek – korek
Miejsce, gdzie ludzie pieką chleb i bułki – kuchenka
Książeczka, w której koloruje się obrazki – zeszyt, kartka
Pan, który ma brodę – Mikołaj

Thing to wake us in the morning – rooster
Device used for digging – shovel
Item used for opening bottles – cork
Place, where people bake bread and buns – oven
Book, in which you colour pictures – notebook, paper sheet
Man with a beard – Santa Claus

At times, the patient did not create derivatives on the basis of the paraphrase she heard, but would only repeat the last word, for instance:

Miejsce, gdzie ludzie kupują i jedzą lody – lody
Człowiek, który jest biedny – biedny
Pan, który jest stary – stary

Where people buy ice-cream – ice-cream
Person who is poor – poor
Man who is old – old

One repetition emerged in an altered, declined form, meaning:

Rzecz do jedzenia zrobiona z cukru – cukier

Edible thing made of sugar – sugar

Within all of the collected material, one structure was created using the wrong root word, and one from the wrong root word with the incorrect formant, e.g.:

Miejsce, gdzie są przyrządy do ćwiczeń na siłę – ćwiczeniarna
Pan, który łowi ryby – łowiarz

Place with strength exercise equipment – exercisory
Man who fishes – fishman
[see earlier translator’s note]

One of the examples saw the girl unable to decide the root word in the presented structure, as a result the last sound was removed;

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23 It is impossible to clearly state whether the child repeated the word being at the same time the root consciously or accidentally.
it was probably accidental and not correct in terms of morphological boundaries, e.g.:

Miejsce, w którym można poczekać na pociąg – poczekalni (-a → ∅)  

The girl also used the word formation szmatka do ścierania ‘rzecz, którą ścieramy podłogi’ [wash-cloth ‘thing for washing floors’].

4. Summary

A child experiencing ID-based language dysfunctions has hindered access to wordbuilding resources. In the presented case, comprehension exceeds production, a phenomenon typical for children in the intellectual norm as well. The child has difficulty forming sentences, which translates into difficulty formulating wordbuilding paraphrases. In the majority of cases, the girl indicated the root word with a component of the actual meaning – however, the paraphrase was only made up of components necessary for the identification of the meaning of the derivate. Disturbed abstract thinking and specific/image-based thinking contribute to the fact that when the girl formed paraphrases, she referred to specific designators, frequently listing them (e.g. the seller sells us things like milk, cucumbers, tomatoes, salad, corn puffs; the cleaning-lady can clean the floor, the windows, the dust, the window, so that it is clean). Maintaining at the stage of specific and specific-functional operations also influences frequent prevalence of associations that are based on the child’s life experiences.

The child managed to produce correct structures on the basis of recalled wordbuilding paraphrases. One can surmise, however, that these were names the child could have come across earlier in life. The low level of acquisition of the rules of formant repartition, despite mastery in the basic skills of creation of formations, shone through in the creation of structures with wrong formants, frequently added at random and intuitively. Structures were also seen made
using a different root word, which continued to be semantically related to the root word used for the explication. If the patient was unable to produce the correct formation, she repeated a part of the presented wordbuilding paraphrase.

Even though the child was able to express specific semantic and pragmatic intentions, she did not sufficiently acquire syntactic efficiency. Due to the failure to master, in the appropriate time, the rules of grammar, the patient, with quite an extensive vocabulary if one would consider the described dysfunction, continues to have problems producing word combinations and sentences. It may thus be surmised that all dysfunctions named above also translate to a reduced level of wordbuilding competences spanning comprehension and creation of wordbuilding structures.

Conclusions were drawn on the basis of a single assessment, hence they require confirmation with a higher number of cases – the conducted studies shall be executed in more detail and subjected to a much more thorough linguistic analysis. A broader perspective of the single case described here can allow the description of differences between comprehension and production skills concerning wordbuilding structures by children with MID and describe their level of wordbuilding competences. In addition, any detailed view of the research focused on the modes of production and understanding of noun derivatives in the area of the selected wordbuilding categories, and a comparison of the results with scores by children in the intellectual norm (on the basis of own research and with reference to the developed knowledge and the research history), would allow the determination of whether children with MID master mechanisms and techniques of derivation in the same way as children in the norm, and what is their level of wordbuilding competences. The collected material will also allow a comparison of wordbuilding competences of children with MID with wordbuilding skills of children with other disabilities/dysfunctions.

To conclude, it must be noted that an assessment of the level of wordbuilding competences should be a component of a comprehensive logopaedic diagnosis (it is, however, frequently omitted in
diagnosis). It is he more important that with children with language dysfunctions (including oligophasia), the observation of acquisition of wordbuilding rules allows more precise determination of speech therapy, the purpose being e.g. the reduction of interference in communication and the development of a suitable level of language competences and capacities.

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