

# Definitional Skills in Children with Developmental Language Disorder: Delayed or Deviant?

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## 1. Introduction

Research has focused on definitional skills since they predict school and academic success (Snow et al., 1989) and exhibit vocabulary knowledge (Nagy & Herman, 1987). Previous research has focused on the difference between breadth and depth of vocabulary knowledge, suggesting that they do not necessarily interact. Breadth refers to the quantity of the words someone knows; while depth refers to the quality of the word knowledge. In order to produce a ‘good’ (i.e. formal) definition, depth knowledge is required, since knowledge of category relationships (superordinate terms, e.g., insect-bee) and word characteristics must be retrieved (Schoonen & Verhallen, 2008).

Children with Developmental Language Disorder (DLD) have lower breadth and depth of vocabulary knowledge; hence weaker vocabularies and lower definitional skills. They, thus, produce informal, i.e., functional and descriptive, definitions even by the end of elementary school, while their typically developing peers use more formal definitions (Marinellie & Johnson, 2002). Word characteristics affect the development of definitions in both (non-)impaired children. Previous studies have shown that the definitions of abstract (Nippold et al., 1999) and compound words (Dourou, 2019) are challenging for typically developing children. To date, few studies have tested definitional skills in children with DLD considering these word characteristics.

It still remains an open issue the deviant-versus-delay debate for children with Developmental Language Disorder (DLD) (Leonard, 2014; Meir & Armon-Lotem, 2017). Regarding the delay hypothesis, children with DLD follow typical acquisitional patterns, albeit with a delay; thus, they perform like their younger language-matched controls (Rice et al., 1995). By contrast, the deviance

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hypothesis supports that these children have disordered abilities and they follow atypical acquisitional patterns (i.e., quantitative and qualitative differences) which are not found in younger language-matched TD children (Briscoe et al., 2001; Meir & Armon-Lotem, 2017).

## **2. Breadth and depth of vocabulary knowledge**

Vocabulary development is a multifaceted ability, which is difficult to investigate (Schmitt, 2014). One accepted and well-known division is between breadth and depth of vocabulary knowledge (Anderson & Freebody, 1981). Breadth of vocabulary knowledge denotes the quantity of knowledge; i.e. the number of acquired words (vocabulary size); while depth signifies the quality of word meanings (Anderson & Freebody, 1981; Henriksen, 1999) and how well are they organized in mental lexicon (Haastrup & Henriksen, 2000; Read, 2004). It also includes (a) the phonological and written representation of the word, (b) morphological information, since speakers notice morphological cues (prefixes, suffixes, affixes and roots) in order to process and store the word (Proctor et al., 2009; Bowers & Kirby, 2010), (c) syntactic structures and (d) pragmatic information.

Breadth of vocabulary knowledge can be measured by means of receptive and expressive vocabulary tasks (Ouellette, 2006). Depth of vocabulary knowledge can be measured by means of different tasks, such as definitional tasks. Definitions offer information about content (meaning) and form (syntactic structure) (Marinellie & Johnson, 2004). Definitions can be either formal or informal. ‘Good’, i.e. formal definitions, use word knowledge, require appropriate semantic features, knowledge of form of definitions (Snow et al., 1989). Formal definitions include a superordinate term and one or more characteristics of the defined word. For instance, “a guitar is a musical instrument that has six strings” (Gutierrez-Cleflén & DeCurtis, 1999, p. 23). In contrast to informal definitions that provide either the function of the word (apple: we eat it), or a descriptive term (apple: tasteful), or synonyms (bush: is a shrub) or an example (apple: I eat an apple every day). Moreover, a formal definition has the form “X is a Y that Z” and it is syntactically more complex (Marinellie & Johnson, 2004); whereas informal definitions use noun or verb phrases and main clauses (read: a book; funny: we laugh).

Breadth and depth of vocabulary knowledge, do not, necessarily, interact (McGregor et al., 2013). That is to say, the quantity of vocabulary knowledge does not signify the quality (depth) of knowledge. However, there are studies that detected a correlation between the two aspects of vocabulary knowledge, which becomes stronger by exposure to language (Qian, 1999; Vermeer, 2001; Li & Kirby, 2015). By means of language exposure speaker’s experience increases and words can be better linked with each other in different contexts (Haastrup & Henriksen, 2000); hence both breadth and depth of vocabulary knowledge enhance.

### **3. The development of vocabulary knowledge in children with and without DLD**

Breadth of vocabulary knowledge increases with age and requires experience in different contexts (Qian, 1999; Haastrup & Henriksen, 2000; Vermeer, 2001; Li & Kirby, 2015). Children with DLD have limited vocabularies (McGregor et al., 2013; Adlof et al., 2021); conceivably due to their limited working memory abilities (Jackson et al., 2021).

The development of definitions starts from pre-school years and continues through adulthood (Dourou et al., 2020). Typically developing (TD) children initially produce informal definitions by giving the function of the word, a description of the word or examples in order to define the word (Snow, 1990; Johnson & Anglin, 1995; Hadley et al., 2016). They often use self-reference (smart: I am smart) (Dourou, 2019). Apart from content, the form of definitions also develops gradually. TD children, initially, use nominal and verbal phrases and more complex clauses by the end of elementary school (Johnson & Anglin, 1995; Friedmann et al., 2011). Formal definitions emerge by the end of the elementary school, since they are more demanding and require decontextualized language skills. Moreover, the equivalent development of content and form is a challenging process, which takes time (Snow et al., 1989; Caramelli et al., 2006).

Children with DLD (previously known as Specific Language Impairment) have language deficits, despite their normal hearing, intellectual or emotional abilities (Leonard, 2014). There is a still open debate about their language abilities, whether they are delayed or deviant (Meir & Armon-Lotem, 2017). The delay hypothesis supports that typical acquisitional patterns are followed, albeit with a delay; thus, DLD children perform like their younger language-matched controls (Rice et al., 1995). Other studies have shown that children with DLD score lower than their language-matched controls (Briscoe et al., 2001). By contrast, the deviance hypothesis claimed that these children develop disordered/atypical acquisitional patterns that are not detected in younger language-matched controls (Meir & Armon-Lotem, 2017). Language deficits in children with DLD that persist into adolescence may suggest that the initial delay becomes ultimately a deviance (Conti-Ramsden et al., 2012).

Studies in children with DLD exhibited that the definitional skills of this group are less developed; they, thus, mainly produce informal definitions compared to their age-matched TD children (Marinellie & Johnson, 2002). In addition, their definitions include less information (Marinellie & Johnson, 2002). The use of informal definitions indicates shallower word knowledge, difficulties in word organization and associations in comparison to their TD peers (McGregor et al., 2013). Some studies support the delayed definitional skills, since they found to be similar to their TD age-matched peers when they were controlled for their breadth of vocabulary knowledge (Krzemien et al., 2021). Finally, in the work of Dosi and Gavriilidou (2020), differences were detected in the definitional skills of children with and without DLD, but only in content and not in form. This dissociation may suggest that their skills are delayed rather than deviant.

Another aspect that should be taken into consideration is word characteristics that have an impact on both breadth and depth of vocabulary knowledge (Hadley et al., 2016). Nouns are acquired earlier than verbs and adjectives (Benedict, 1979). However, concrete nouns are acquired earlier than abstract nouns (Maguire et al., 2006), since they are conceptually less complex. Similarly, children at the end of elementary school more often use formal definitions in concrete nouns than in abstract ones. Definitions of abstract nouns become more formal in late adolescence and in adulthood (Dourou, 2019). The effect of abstractness on definitions of children with DLD has not been studied yet. Similarly, the effect of compoundness is under-researched (Dourou, 2019). Children use more often formal definitions in simple words compared to compound ones. School-aged children tend to decompose compound words in parts (cheese pie: cheese and pie) and to use, thus, informal definitions (*Tautologies*, i.e., the repetition of the term which is expected to be defined). The definitions of compound words are challenging even for adults (Dourou, 2019). Children with DLD have difficulty ordering noun compounds and they often misorder of the compounds; possibly due to their failure to fully comprehend the semantic relationship between the head and the modifier (Grela, Snyder and Hiramatsu, 2005). Other studies have not detected a similar performance (Dosi, Gavriilidou and Dourou, 2021); however, they detected the use of tautologies in the definition of compound words.

#### **4. The present study**

To address the aforementioned gaps in current literature, the aim of this study was threefold: (1) to extend the research on the development of definitional skills of nouns considering noun categories (simple vs. compound; concrete vs. abstract); (2) to detect any possible link between breadth and depth of vocabulary knowledge; and finally, (3) to investigate whether definitional skills of children with DLD are delayed or deviant.

##### **4.1. Participants**

Thirty-six Greek-speaking children (5;5-12 years old; mean: 8;1; SD: 1.6) matched on gender and socio-economic background took part. Twelve of them were children with DLD (henceforth DLD group; age range: 7;3-11;8 years; mean age: 9;1, SD: 1.2), who were recruited by Speech and Language Pathologists (SLP) and diagnosed following the conventional criteria (Bishop, 2017). In addition, two control groups of TD children took part. The first Control Group (henceforth CG1) formed by age-matched TD children (up to 6-months younger/older than each DLD child; age range: 7;2-12 years; mean age: 8;5, SD: 1.6). The second Control Group (henceforth CG2) formed by language-matched TD children (similarly, up to 6-months younger/older in respect to language abilities than the equivalent DLD child; age range: 5;5-9;5 years; mean age: 6;6, SD: 0.7).

All participants were tested on their non-verbal intelligence (Raven et al., 2008) and on their expressive vocabulary (Vogindroukas et al., 2009). The purpose of the administration of the tasks was to ascertain a normal general non-verbal intelligence (cut-off point 85) and to match the DLD group with TD children of equivalent vocabulary abilities.

Age differences were detected among the groups ( $H(2) = 18.575, p < .001$ ). More specifically, CG2 was significantly younger than the DLD group and the CG1 ( $U = 1.000, p < .001$  and  $U = 18.500, p = .001$ ); while no difference was found between the DLD and CG1 groups ( $U = 48.500, p = .912$ ).

**Table 1: Participants' profile**

Group	N	Chronological age (years; SD)	Vocabulary age (SD)	Non-verbal intelligence (standard score; SD)
DLD	12	9;1 (1.2)	7.2 (1.7)	98.5 (4.5)
CG1	12	8;5 (1.6)	10 (1.6)	102.6 (3.4)
CG2	12	6;6 (0.7)	6.9 (0.7)	87.8 (2.8)

The results have shown that the groups differ in terms of expressive vocabulary abilities ( $H(2) = 17.952, p < .001$ ). The CG1 group outperformed both the DLD group and the CG2 ( $U = 14.500, p < .001$ ; and  $U = 4.500, p < .001$ , respectively), while the two latter groups did not differ ( $U = 63.000, p = .630$ ).

In the non-verbal intelligence, the DLD and the CG1 did not differ ( $U = 52.000, p = .266$ ), while significant differences were detected in the CG2 compared to the two older groups ( $U = 1.000, p < .001$ , for both comparisons).

#### 4.2. Materials, procedure & reliability

Participants were also tested for their definitional skills by means of an elicited production task. The task included 16 items (nouns, verbs and adjectives); however, for the purposes of this study, we analyzed only the definition of nouns (two simple concrete, two simple abstract, two compound concrete and two compound abstract). The nouns included in the data collection instrument were highly frequent and age appropriate.

Before the main section, a warm-up session preceded. First, the examiner asked the participant "what does X mean?" and (s)he gave a formal definition. Based on the definition given, participant had to define another word. If an informal definition was used, the examiner provided corrective feedback by emphasizing on the formal definition of the word. During the main session no aid or prompt were allowed. Participant's responses were audio-taped and transcribed afterwards.

The marking was based on Marinellie and Johnson (2002, 2004). Definitions were scored for both content and form on a five-point scale. For content, the unanswered items or the irrelevant answers received 0 points. The responses rated with 1 point included the function of the word (apple: we eat it), the description (apple: red and round), an example (apple: is one such on the back of my cell

phone) and an association (apple: breakfast). Definitions that had a self-reference (apple: I eat an apple), or an irrelevant categorization (apple: thing) were evaluated with 2 points; while the definitions with related categorization (apple: fruit) or synonyms (bush: is a shrub) received 3 points. Answers that included the superordinate category and a combination of some of the above characteristics (apple: something that is red and round and eat it in winter) received 4 points (partial formal/Aristotelian definitions). Finally, responses that included the superordinate category and at least two characteristics of the word were called formal/ Aristotelian/ lexicographical definitions and received 5 points (apple: red fruit that we eat in winter and is good for health). For form, the words that were not answered received 0 points. If the definition contained a word or article + word (apple: fruit) received 1 point. If it contained a verb phrase (trip: I go on a trip in the summer) received 2 points. If words "something" or "thing" + descriptive sentence (apple: something we eat in winter) were included, they received 3 points. Finally, if the definition contained the superordinate category and one or more referential sentences received 4 and 5 points, respectively (e.g. apple: a fruit that is round and is eaten in winter). For more examples, see Dosi et al. (2021).

The maximum total score for all categories was 40 points for content and form (8 words per participant with the maximum of 5 points per word). The results below will be presented in percentages.

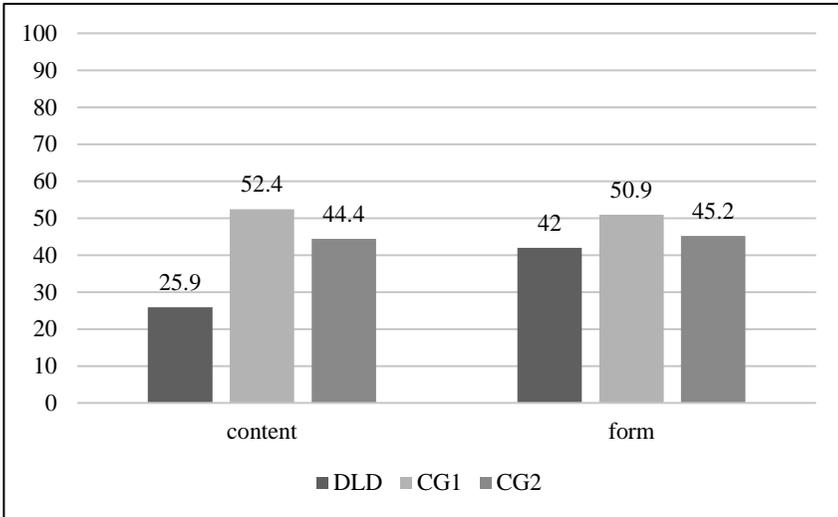
Inter-judge reliability of content coding was evaluated for all responses given by 36 subjects. A double-blind marking was followed. The final percentage of agreement resulted by dividing the number of responses coded identically by the total number of coded definitions (288 definitions). The inter-judge agreement for content was 90.3%, while for form was 93.6%. To check the reliability of the task a Cronbach's Alpha coefficient was calculated. The result was .865 suggesting a high degree of internal consistency.

### 4.3. Data analyses

To investigate our first and second aim we performed non-parametric tests (i.e., Kruskal-Wallis test and Mann Whitney test) in raw numbers, since the cohort of our groups was small. To test our last aim, we performed bivariate correlations between vocabulary scores and the overall scores on content and form for each group separately.

## 5. Results

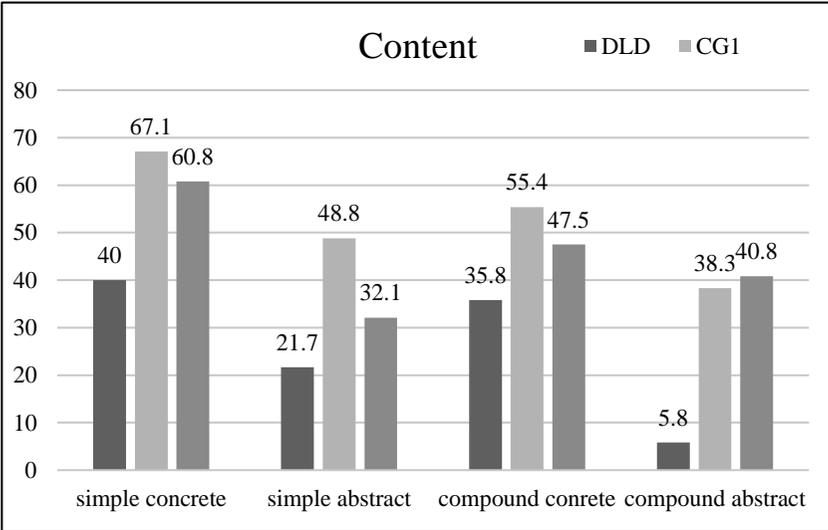
The overall scores in noun definitions (cf. Figure 1) suggest that the DLD group produced more informal definitions (25.9%) than the other two control groups (CG1: 52.4%,  $U = 14.000$ ,  $p = .001$ ; and CG2: 44.4%;  $U = 20.000$ ,  $p = .002$ ), while no differences were found between the two control groups ( $U = 53.500$ ,  $p = .291$ ). By contrast, in form, the three groups performed similarly; thus, no statistical differences were found ( $H(2) = 2.424$ ,  $p = .298$ ).



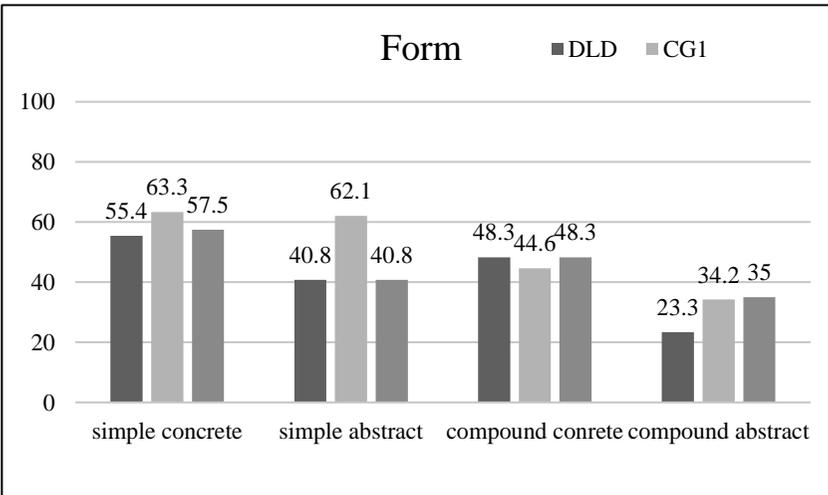
**Figure 1. Groups' performance (%) in noun definitions (content & form)**

Considering the factors of abstractness and compoundness for content (cf. Figure 2), differences between the DLD and the CG1 were found in all categories, suggesting that the DLD group produces more informal definitions than the age-matched group (simple concrete:  $U = 28.000$ ,  $p = .010$ ; simple abstract:  $U = 19.500$ ,  $p = .001$ ; compound concrete:  $U = 33.500$ ,  $p = .024$ ; compound abstract:  $U = 16.500$ ,  $p = .001$ ). Particularly demanding were the definitions of compound abstract nouns (5.8%), where many children of the DLD group did not give any response. Differences between the DLD group and the CG2 were found only in simple concrete ( $U = 37.500$ ,  $p = .045$ ) and compound abstract nouns ( $U = 11.000$ ,  $p < .001$ ); while the two control groups differed only in simple abstract nouns ( $U = 38.000$ ,  $p = .050$ ), where the CG1 used more formal definitions than the CG2.

Examining the same factors for form (cf. Figure 3), the only differences were detected in the simple abstract nouns where the CG1 used more complex forms than the DLD and the CG2 ( $U = 7.500$ ,  $p = .001$ ;  $U = 23.000$ ,  $p = .004$ , respectively); while no difference was found in that category between DLD and CG2 ( $U = 69.500$ ,  $p = .887$ ). In addition, absence of other differences was detected between the groups (DLD vs. CG1: simple concrete:  $U = 51.000$ ,  $p = .242$ ; compound concrete:  $U = 62.500$ ,  $p = .590$ ; compound abstract:  $U = 53.500$ ,  $p = .291$  | DLD vs. CG2: simple concrete:  $U = 63.000$ ,  $p = .630$ ; compound concrete:  $U = 71.000$ ,  $p = .977$ ; compound abstract:  $U = 54.000$ ,  $p = .319$  | CG1 vs. CG2: simple concrete:  $U = 58.000$ ,  $p = .443$ ; compound concrete:  $U = 58.000$ ,  $p = .443$ ; compound abstract:  $U = 67.500$ ,  $p = .799$ ).



**Figure 2. Groups' performance (%) considering different noun characteristics (content)**



**Figure 3. Groups' performance (%) considering different noun characteristics (form)**

Investigating any possible link between breadth and depth of vocabulary knowledge, we performed correlations for each group separately. The results exhibited correlations only in the CG1 between the vocabulary task and (a) the overall scores (content & form;  $r(12) = .836, p = .001$ ;  $r(12) = .834, p = .001$ ), (b) simple concrete (content & form;  $r(12) = .819, p = .001$ ;  $r(12) = .890, p < .001$ ),

(c) compound concrete (content & form;  $r(12) = .896, p < .001$ ;  $r(12) = .709, p = .010$ ) and (d) compound abstract (form;  $r(12) = .591, p = .043$ ).

## 6. Discussion

The present study set three aims (1) to enhance the research on the development of definitional skills of nouns considering noun categories (simple vs. compound; concrete vs. abstract) in Greek-speaking children with DLD; (2) to notice any link between breadth and depth of vocabulary knowledge; and (3) to investigate whether the definitional skills of this group are delayed or deviant.

The results of the overall scores have shown that the DLD group produced more informal definitions (i.e., the function/ description of the word or an example; cf. Marinellie & Johnson 2004; Gavriilidou, 2011, 2015; Dourou 2019) for content than the other two control groups (Marinellie & Johnson, 2002; Briscoe et al., 2001); namely the used words such as ‘thing’ or ‘something’ instead of the superordinate category (Nippold, 1995). This strategy was also detected in the language-matched control group. The similar performance of the two control groups may result from their mean of chronological age, which is under 10 years of age (Caramelli et al., 2006; Dourou, 2019). Nevertheless, no differences were found in the form of definitions, where most of the participants used verb phrases. This dissociation between content and form further indicates that content of definitions is more demanding than form (Dosi & Gavriilidou, 2020). Delving into word characteristics of definitions, we still observed differences for content between the DLD and the aged-matched control group in all categories. However, differences between the DLD group and the language-matched control group were observed only in simple concrete and compound abstract nouns. More demanding condition for the DLD group was compound abstract nouns, in which the vast majority used tautologies (i.e., cheese pie: cheese and pie) suggesting that the compositionality and the hierarchical morphological are impaired (Grela et al., 2005). As mentioned above, the similar performance of the two control groups in all categories, apart from simple abstract nouns, originate in the chronological age of the groups (under 10 years old) (Caramelli et al., 2006). Continuing this line of reasoning, the absence of finding differences in form, apart from the category of simple abstract nouns, is due to the fact that the majority of the participants of all groups predominately used verb phrases, which is a common practice in young children (Friedmann et al., 2011). These findings suggest that research on definitional skills should focus on the interrelation of different word characteristics.

Answering to our second aim, a correlation between breadth and depth of vocabulary knowledge was found, but only in the aged-matched control group, which may suggest that it takes time, and it requires language experience (i.e., exposure in different language contexts) for this link to emerge (Qian, 1999, 2002; Vermeer, 2001; Li & Kirby, 2015). This can be further justified by the fact that correlations were found between vocabulary and definitions (both for content and form) in concrete words (simple and compound) but not in abstract ones, at least

for content, since abstract words require better cognitive abilities and language exposure (McGregor et al., 2013).

Our last question was about the deviant-versus-delay debate. The aforementioned outcomes suggest that DLD group's abilities are delayed rather than deviant (Krzemien et al., 2021), since differences between the language-matched group detected only in compound abstract and simple concrete nouns and only in content of definitions. Adding to this, most of the children, regardless of the group, used verb phrases. Moreover, the absence of correlation between breadth & depth of lexical knowledge in DLD and CG2 enhances delayed hypothesis, since similar performance observed in both groups (Krzemien et al., 2021). Nevertheless, we should be aware about what Conti-Ramsden et al. (2012) suggest that language deficits which persist into adolescence may suggest that the initial delay becomes ultimately a deviance. This outcome can be further leveraged by educators and speech language pathologists in order to plan appropriate interventions.

To conclude, this study provided data on definitional skills of Greek-speaking children with DLD. Our main findings suggest that (1) children's with DLD definitional skills seem to be delayed rather than deviant, (2) abstractness together with compoundness complicate the definitional skills, especially, in children with DLD; research and clinical practice should, thus, examine the interdependence of different parameters; and (3) the link between breadth and depth of vocabulary knowledge emerges with age and language exposure.

Finally, we should acknowledge some limitations, such as the small cohort of the participants, the difficulty in finding children with DLD in Greece, since they are often misdiagnosed and the differences in the methods and the consistency of the interventions that they receive (Dosi & Gavriilidou, 2020; Dosi et al., 2021). Despite the fact that this study is preliminary, it contributes to the existing work on definitional skills by investigating understudied variables in a less-studied language. We consider our findings less in terms of firm conclusions, and more as an attempt to steer future research into this direction, in order for safe conclusions to be reached.

## References

- Adlof, Suzanne M., Baron, Lauren S., Bell, Bethany A., & Scoggins, Joanna (2021). Spoken Word Learning in Children with Developmental Language Disorder or Dyslexia. *Journal of speech, language, and hearing research: JSLHR*, 64(7), 2734–2749. [https://doi.org/10.1044/2021\\_JSLHR-20-00217](https://doi.org/10.1044/2021_JSLHR-20-00217)
- Anderson, Richard C. & Freebody, Peter (1981). Vocabulary Knowledge. In John T. Guthrie (ed.), *Comprehension and teaching: Research reviews* (pp.77-117). Newark, DE: International Reading Association.
- Benedict, Helen (1979). Early lexical development: Comprehension and production. *Journal of Child Language*, 6(2), 183–200. <https://doi.org/10.1017/S0305000900002245>
- Bowers, Peter N. & Kirby, John R. (2010). Effects of morphological instruction on vocabulary acquisition. *Reading and Writing*, 23, 515–537. <https://doi.org/10.1007/s11145-009-9172-z>

- Briscoe, Josie, Bishop, Dorothy V. M. & Norbury, Courtenay Frazier (2001). Phonological processing, language, and literacy: A comparison of children with mild to moderate sensorineural hearing loss and those with specific language impairment. *The Journal of Child Psychology and Psychiatry and Allied Disciplines*, 42(3), 329–340. <https://doi.org/10.1111/1469-7610.00726>
- Caramelli, Nicoletta, Borghi, Anna M. & Setti, Annalisa (2006). The identification of definition strategies in children of different ages. *Linguistica Computazionale*, 26, 155–177.
- Conti-Ramsden, Gina, St Clair, Michelle C., Pickles, Andrew & Durkin, Kevin (2012). Developmental trajectories of verbal and nonverbal skills in individuals with a history of specific language impairment: From childhood to adolescence. *Journal of Speech, Language, and Hearing Research*, 55, 1716–1735. <https://doi.org/10.1044/1092-4388>
- Dosi, Ifigeneia & Gavriilidou, Zoe (2020). The role of cognitive abilities in the development of definitions by children with and without Developmental Language Disorder. *Journal of Psycholinguistic Research*, 49(5), 761-777. <https://doi.org/10.1007/s10936-020-09711-w>
- Dosi, Ifigeneia, Gavriilidou Zoe & Dourou, Chysoula (2021). Definitional Skills of Learners with and without Developmental Language Disorder. *International Journal of Learning, Teaching and Educational Research*, 20(10), 193-216. <https://doi.org/10.26803/ijlter.20.10.11>
- Dourou, Chysoula (2019). *Σύγκριση της ικανότητας ορισμού των λέξεων από μόνον διαφορετικών ηλικιακών ομάδων* [The comparison of definition ability of different age groups]. Unpublished doctoral dissertation. Department of Greek Philology. Democritus University of Thrace.
- Dourou, Chysoula, Gavriilidou, Zoe & Markos, Angelos (2020). Definitional skills and preferred definition types according to age, gender, educational level and career orientation. *International Journal of Research Studies in Education*, 9(2), 29-49. <https://doi.org/10.5861/ijrse.2020.5021>
- Friedmann, Naama, Aram, Dorit & Novogrodsky, Rama (2011). Definitions as a window to the acquisition of relative clauses. *Applied Psycholinguistics*, 32(4), 687-710. <https://doi.org/10.1017/S0142716411000026>
- Grela, Bernard, Snyder, William & Hiramatsu, Kazuko (2005). The production of novel root compounds in children with specific language impairment. *Clinical Linguistics and Phonetics*, 19, 701–715. <https://doi.org/10.1080/02699200400000368>
- Gutierrez-Clellen, Vera, & DeCurtis, Lisa (1999). Word definitional skills in Spanish-speaking children with language impairment. *Communication Disorders Quarterly*, 21(1), 23-31. <https://doi.org/10.1177/152574019902100104>
- Haastrup, Kirsten, & Henriksen, Birgit (2000). Vocabulary acquisition: acquiring depth of knowledge through network building. *International Journal of Applied Linguistics*, 10, 221-240. <https://doi.org/10.1111/j.1473-4192.2000.tb00149.x>
- Hadley, Elizabeth B., Dickinson, David K., Hirsh-Pasek, Kathy, Golinkoff, Roberta Michnick, & Nesbitt, Kimberly T. (2016). Examining the Acquisition of Vocabulary Knowledge Depth Among Preschool Students. *Reading Research Quarterly*, 51(2), 181– 198. <https://doi.org/10.1002/rrq.130>
- Henriksen, Birgit (1999). Three dimensions of vocabulary development. *Studies in Second Language Acquisition*, 21, 303-317. <https://doi.org/10.1017/S0272263199002089>
- Jackson, Emily, Leitão, Suze, Claessen, Mary, & Boyes, Mark (2021). Word learning and verbal working memory in children with developmental language disorder. *Autism & Developmental Language Impairments*, 6, 1-20. <https://doi.org/10.1177/239694152111004109>

- Johnson, Carla J. & Anglin, Jeremy M. (1995). Qualitative developments in the content and form of children's definitions. *Journal of Speech and Hearing Research*, 38(3), 612-629. <https://doi.org/10.1044/jshr.3803.612>
- Krzemien, Magali, Thibaut, Jean-Pierre, Jemel, Boutheina, Levaux, Emilie & Maillart, Christelle (2021). How do children with developmental language disorder extend novel nouns? *Journal of Experimental Child Psychology*, 202, 105010. <https://doi.org/10.1016/j.jecp.2020.105010>
- Leonard, Laurence B. (2014). *Children with specific language impairments*. Cambridge, MA: MIT Press.
- Li, Miao, & Kirby, John R. (2015). The effects of vocabulary breadth and depth on English reading. *Applied Linguistics*, 36(5), 611–634. <https://doi.org/10.1093/applin/amu007>
- Maguire, Mandy J., Hirsh-Pasek, Kathy, & Golinkoff, Roberta Michnick (2006). A unified theory of word learning: Putting verb acquisition in context. In Kathy Hirsh-Pasek, & Roberta Michnick Golinkoff (Eds.), *Action meets word: How children learn verbs* (pp. 364–391). New York, NY: Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780195170009.003.0015>
- Marinellie, Sally A., & Johnson, Cynthia (2002). Definitional skill in school-age children with specific language impairment. *Journal of Communication Disorders*, 35(3), 241-259. [https://doi.org/10.1016/S0021-9924\(02\)00056-4](https://doi.org/10.1016/S0021-9924(02)00056-4)
- Marinellie, Sally A., & Johnson, Cynthia (2004). Nouns and Verbs: A comparison of definitional style. *Journal of Psycholinguistic Research*, 33(3), 217-235. <https://doi.org/10.1023/B:JOPR.0000027963.80639.88>
- McGregor, Karla K., Oleson, Jacob, Bahnsen, Alison & Duff, Dawna (2013). Children with developmental language impairment have vocabulary deficits characterized by limited breadth and depth. *International Journal of Language & Communication Disorders*, 48, 307–319. <https://doi.org/10.1111/1460-6984.12008>
- Meir, Natalia & Armon-Lotem, Sharon (2017). Delay or deviance: Old question—New evidence from bilingual children with specific language impairment (SLI). In LaMendola, Maria & Scott, Jeniffer (Eds), *Proceedings of the 41st annual Boston University Conference on Language Development* (pp. 495–508). Somerville, MA: Cascadilla Press.
- Nagy, William E., & Herman, Patricia A. (1987). Breadth and depth of vocabulary knowledge: Implications for acquisition and instruction. In Margaret G. McKeown & Mary E. Curtis (Eds.), *The nature of vocabulary acquisition* (pp. 19–35). Lawrence Erlbaum Associates, Inc.
- Nippold, Marilyn A., Hegel, Susan, Sohlberg, McKay Moore, & Schwarz, Ilsa (1999). Defining abstract entities: Development in preadolescents, adolescents, and young adults. *Journal of Speech, Language, and Hearing Research*, 42, 473–481. <https://doi.org/10.1044/jslhr.4202.473>
- Ouellette, Gene P. (2006). What's meaning got to do with it: The role of vocabulary in word reading and reading comprehension. *Journal of Educational Psychology*, 98(3), 554–566. <https://doi.org/10.1037/0022-0663.98.3.554>
- Proctor, Patrick C., Uccelli, Paola, Dalton, Bridget, & Snow, Catherine E. (2009) Understanding depth of vocabulary online with bilingual and monolingual children. *Reading & Writing Quarterly*, 25(4), 311-333. <https://doi.org/10.1080/10573560903123502>
- Qian, David (1999). Assessing the roles of depth and breadth of vocabulary knowledge in reading comprehension. *Canadian Modern Language Review*, 56, 282–308. <https://doi.org/10.3138/cmlr.56.2.282>
- Raven, John, Court, John Hugh & Raven, Jean (2008). *Raven's coloured progressive matrices and vocabulary scales*. London: Pearson Education.

- Rice, Mabel L., Wexler, Kenneth & Cleave, Patricia L. (1995). Specific language impairment as a period of extended optional infinitive. *Journal of Speech and Hearing Research*, 38(4), 850–863. <https://doi.org/10.1044/jshr.3804.850>
- Schmitt, Norbert (2014). Size and Depth of Vocabulary Knowledge: What the Research Shows. *Language Learning*, 64, 913-951. <https://doi.org/10.1111/lang.12077>
- Schoonen Rob & Verhallen Marianne (2008). The assessment of deep word knowledge in young first and second language learners. *Language Testing*, 25, 211–236. <https://doi.org/10.1177/0265532207086782>
- Snow, Catherine E. (1990). The development of definitional skill. *Journal of Child Language*, 17, 697-710. <https://doi.org/10.1017/S0305000900010953>
- Snow, Catherine E., Cancino, Herlinda, Gonzalez, Paulina, & Shriberg, Elizabeth (1989). Giving formal definitions: An oral language correlate of school literacy. In David Bloome (Ed.), *Literacy in Classrooms* (pp. 233–249). Norwood, NJ: Ablex.
- Vermeer, Anne (2001). Breadth and depth of vocabulary in relation to L1=L2 acquisition and frequency of input. *Applied Psycholinguistics*, 22, 217–234. <http://doi.org/10.1017/S0142716401002041>
- Vogindroukas, Ioannis, Protopapas, Athanassios & Sideridis, Georgios (2009). *Δοκιμασία εκφραστικού λεξιλογίου* [Expressive vocabulary assessment] (Greek version of Renfrew word finding vocabulary test). Chania, Crete: Glafki.

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