SEMANTIC DEVELOPMENT IN SIX-YEAR-OLD CHILDREN: AN ANALYSIS OF HOMONYMS, ANTONYMS, SYNONYMS, AND METONYMS

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Abstract

Semantic development represents a fundamental component of speech and language development and plays a crucial role in communication, learning, and later academic achievement. The aim of this study was to assess the level of semantic development in six-year-old children and to examine potential differences in performance according to gender, type of educational institution, and speech-language status.
The study included 47 children aged 5.5 to 6.5 years (M = 6.03, SD = 0.32) attending preschools and primary schools in the municipalities of Vrapčište and Gostivar, North Macedonia. Semantic development was assessed using Vladisavljević's Semantic Test, which evaluates the understanding and use of homonyms, antonyms, synonyms, and metonyms. Descriptive statistics, an independent-samples t-test, and one-way analysis of variance (ANOVA) were employed for data analysis.
The results indicated that the highest scores were achieved on the homonym subtest (M = 8.57, SD = 2.35), whereas the lowest scores were observed on the metonym subtest (M = 3.98, SD = 1.74). The mean total score on the Semantic Test was 22.45 (SD = 3.59), exceeding the theoretical midpoint of the test. No statistically significant gender differences were found in semantic development. In contrast, statistically significant differences were identified according to the type of educational institution (F = 5.470, p = .008) and speech-language status (F = 2.454, p = .045).
The findings suggest that semantic categories do not develop at the same rate and that both the educational environment and speech-language status are associated with the level of semantic development in six-year-old children. These results highlight the importance of considering environmental and developmental factors when assessing semantic abilities during early childhood.

Keywords: semantic development, lexical-semantic abilities, preschool age, speech and language development

Introduction

Language development is one of the most significant aspects of early childhood development. The emergence of first words marks the beginning of lexical-semantic development and serves as an important indicator of a child's speech and language development (Vuković, 2015). As children grow, they gradually expand their vocabulary, organize word meanings within semantic memory, and use them across a variety of communicative contexts.
According to Chomsky (2009), language acquisition is a process of growth and maturation of innate linguistic abilities that develop through exposure to an appropriate linguistic environment. He argues that every child possesses a universal capacity for language acquisition and that the fundamental structures of language are typically mastered during early childhood. Particular importance is attributed to the so-called critical period, during which language abilities develop most intensively.
Lyons (1981) defines language acquisition as the process through which a child achieves fluent command of their native language. Although the capacity for language acquisition is biologically determined, the specific language a child learns depends on the linguistic and social environment in which they are raised. Consequently, children throughout the world

acquire their native language naturally and spontaneously, without formal instruction, through everyday interactions with people in their surroundings.

Semantic development constitutes an essential aspect of both speech-language and cognitive development and refers to the understanding, organization, and use of word meanings (Filipova et al., 2023). Throughout this process, children gradually establish connections between linguistic forms and their meanings, learn that words may carry multiple meanings, and develop various semantic relationships among concepts. During the early stages of development, word meanings are often either restricted or overgeneralized; however, with increasing age and experience, they become more precise, differentiated, and flexible (Vuković, 2015).

According to Fromkin (1983), semantics is the branch of linguistics concerned with the study of the meanings of words, phrases, and sentences. The acquisition of meaning occurs gradually through the formation of concepts and their association with corresponding linguistic labels. Gleason (1985) emphasizes that conceptual development and the process of lexicalization do not proceed at the same rate; rather, children gradually acquire meanings that increasingly resemble those used by adults.

The development of semantic abilities is closely related to the development of thinking and intelligence (Vygotsky, 1977; Golubović, 1997; Filipova et al., 2023). According to Isaković and Kovačević (2009), understanding word meanings requires adequate experience, knowledge, and well-developed symbolic thinking. Semantic development is commonly assessed through the examination of different lexical-semantic categories, including homonyms, antonyms, synonyms, and metonyms (Filipova et al., 2023).

Vladisavljević (1977) emphasizes that these semantic categories do not develop at the same rate. While homonyms and antonyms are generally acquired relatively early, understanding synonyms and, particularly, metonyms and figurative meanings requires a higher level of linguistic and cognitive maturity.

Lexical-semantic abilities undergo rapid development during the preschool years. Children's vocabulary expands from approximately 50 words at 18 months of age to about 2,500–3,000 words by the age of 6 to 7 years, with receptive vocabulary typically developing more rapidly than expressive vocabulary (Golubović, 1997; Filipova et al., 2023). This growth in vocabulary facilitates the use of increasingly complex linguistic structures and more effective communication.

In addition to vocabulary expansion, early childhood is characterized by the development of an understanding of semantic relationships. Children gradually acquire the concepts of synonymy, antonymy, and homonymy, as well as hierarchical relationships among concepts. These abilities constitute an important foundation for reading, writing, and later academic achievement (Rodd, Vitello, Woollams, & Adank, 2015).

According to Bolinger (2002), the acquisition of new word meanings is based on three fundamental assumptions. The first is the whole-object assumption, according to which a word refers to an entire object rather than to its individual features or parts. The second is the category assumption, whereby a newly acquired word is generalized to other objects belonging to the same category. The third is the basic-level assumption, according to which new words are initially associated with objects that share similar characteristics.

The process of semantic acquisition is also characterized by the occurrence of semantic errors. The most common are overextension, in which a word is used to refer to a broader category of concepts than intended, and underextension, in which a word is restricted to a limited set of objects despite having a wider conventional meaning (Brown, 1958). Furthermore, children may experience difficulties in understanding verb meanings and in acquiring dimensional concepts. More general concepts, such as *big* and *small*, are typically acquired earlier, whereas more specific spatial and dimensional relationships are mastered gradually as children's linguistic and cognitive abilities develop (Philip, 1995).

Lexical-Semantic Development in Preschool Children

The development of lexical-semantic abilities represents an important component of speech and language development. Semantic development refers to the gradual acquisition, organization, and understanding of word meanings and the relationships among them. This process begins in early childhood and continues throughout the school years (Clark, 1977; Skeide & Friederici, 2016; Filipova et al., 2023).

Between the ages of 5 and 6 years, children rapidly expand their vocabulary and refine their semantic representations, becoming increasingly proficient in understanding and using different word meanings and semantic relationships among concepts (Conti-Ramsden & Durkin, 2012). Research has shown that semantic information plays a crucial role in language comprehension, and children at this age rely heavily on word meanings when interpreting linguistic messages (Wu, Vissiennon, Friederici, & Brauer, 2016).

The ability to process word meanings begins to develop during the earliest stages of life. Event-related potential (ERP) studies conducted by Friedrich and Friederici (2012) have demonstrated that sensitivity to semantic anomalies is already present in children between one and two years of age. Although the development of more complex semantic relationships continues throughout later developmental stages, the fundamental semantic structures necessary for successful language comprehension and use are generally acquired by six years of age (Gleitman & Wanner, 1982; Pinker, 1984; Skeide & Friederici, 2016).

These findings highlight the importance of assessing lexical-semantic abilities during the preschool period, as they serve as important indicators of speech-language development and readiness for formal schooling.

Methods

Participants

The study included 47 children aged between 5.5 and 6.5 years ($M = 6.03$, $SD = 0.32$). Participants were recruited through convenience sampling from preschools and primary schools in the municipalities of Vrapčište and Gostivar, North Macedonia. All children were individually assessed. Participation was voluntary, and data were analyzed anonymously.

Instrument

Lexical-semantic development was assessed using the **Semantic Test** developed by Vladisavljević (1977). The instrument consists of four subtests designed to evaluate the acquisition of homonyms, antonyms, synonyms, and metonyms. Each subtest contains 10 stimulus words, allowing for the assessment of different semantic relationships among words. The test provides normative values for children up to seven years of age and is widely used in the assessment of lexical-semantic development.

Procedure

Data collection was conducted individually in a quiet room within the educational institutions attended by the children. The Semantic Test was administered according to the standardized instructions provided in the test manual. Responses were scored following the prescribed scoring criteria, with one point awarded for each correct response. The total score was calculated as the sum of the scores obtained on the four subtests.

Statistical Analysis

Statistical analyses were performed using **IBM SPSS Statistics 21.** Descriptive statistics, including means, standard deviations, minimum and maximum values, were used to summarize participant characteristics and test performance. Differences between groups were examined using an independent-samples *t*-test and one-way analysis of variance (ANOVA). Statistical significance was established at $p < .05$.

Results

Sample Characteristics

The study sample consisted of 47 children aged between 5.5 and 6.5 years (M = 6.03, SD = 0.32). Tables 1–4 present the main characteristics of the participants, including gender, educational setting, and speech-language status, as well as descriptive statistics for age.

Table 1 *Distribution of Participants by Sex*

Sex	n	%
Female	29	61.7
Male	18	38.3
Total	47	100.0

Note. N = 47 participants.
As presented in Table 1, the sample comprised 47 children, including 29 girls (61.7%) and 18 boys (38.3%).

Table 2 *Distribution of Participants by Educational Setting*

Educational Setting	n	%
Preschool	19	40.4
Primary School	26	55.3
Other	2	4.3
Total	47	100.0

Note. N = 47.

As shown in Table 2, the largest proportion of participants (55.3%) were first-grade students, while 40.4% were preschool children enrolled in institutional early childhood education and care programs. A small proportion of the sample (4.3%) was not attending any educational institution at the time of assessment.

Table 3 *Distribution of Participants According to Speech and Language Status*

Speech and Language Status	n	%
Typical speech and language development	41	87.2
Mild speech and language difficulties	6	12.8
Total	47	100.0

Note. N = 47.

The data presented in Table 3 indicate that the majority of participants (87.2%) demonstrated typical speech-language development, whereas 12.8% exhibited mild speech-language difficulties that were not considered clinically significant.

Table 4 *Descriptive Statistics for Age of Children Assessed with the Semantic Test*

Variable	Value
Mean	6.03
Standard Deviation	0.32
Minimum	5.5
Maximum	6.5

Note. N = 47.

Descriptive statistics revealed a mean participant age of 6.03 years (M = 6.03, SD = 0.32), with ages ranging between 5.5 and 6.5 years.

Table 5 *Descriptive Statistics for Performance on the Semantic Test Subtests and the Overall Semantic Development Score*

Variable	N	M	SD	Min	Max
Homonyms	47	8.57	2.35	4	16
Antonyms	47	5.23	1.75	1	8
Synonyms	47	4.66	2.14	0	9
Metonymy	47	3.98	1.74	0	7
Overall Semantic Development Score	47	22.45	3.59	15	30

Note. M = mean; SD = standard deviation.

Lexical-semantic abilities were assessed using the **Semantic Test** developed by Kostić, Vladisavljević, and Popović (1983). Descriptive statistics for the individual subtests and the total test score are presented in Table 5.

As presented in Table 5, the highest mean score was obtained on the homonym subtest (M = 8.57, SD = 2.35), followed by the antonym subtest (M = 5.23, SD = 1.75), the synonym subtest (M = 4.66, SD = 2.14), and the metonym subtest (M = 3.98, SD = 1.74).

The mean total score on the Semantic Test was 22.45 (SD = 3.59), with participant scores ranging from 15 to 30 points. The observed mean score exceeded the theoretical midpoint of the test (Mt = 20), suggesting an overall level of lexical-semantic development above the expected average for the instrument.

The pattern of mean scores across the four subtests indicates variability in the acquisition of different semantic categories, with the highest performance observed on the homonym subtest and the lowest performance observed on the metonym subtest.

To examine potential differences in semantic development according to gender, educational setting, and speech-language status, an independent-samples *t*-test and one-way analysis of variance (ANOVA) were performed.

Table 6 *Differences in Semantic Development by Sex (Independent Samples t-Test)*

Variable	Sex	N	M	SD	t	p
Semantic Development	Female	29	22.07	3.48		
	Male	18	23.06	3.77	-0.887	.375

Note. Independent samples t-test. SD = standard deviation.

Table 6 presents the results of the independent-samples *t*-test conducted to examine gender differences in semantic development. Male participants achieved a slightly higher mean score (M = 23.06, SD = 3.77) than female participants (M = 22.07, SD = 3.48). However, the results indicated that this difference was not statistically significant ($p > .05$). Therefore, no significant gender differences in semantic development were observed in the present sample.

Table 7 *Differences in Semantic Development According to Educational Setting (One-Way ANOVA)*

Educational Setting	N	M	SD	F / p
Preschool	19	24.37	3.39	
Primary School	26	21.15	3.27	
Other	2	0.00	0.00	5.470 / .008
Total	47	22.45	3.59	

Note. One-way ANOVA indicated a statistically significant difference between groups, F = 5.470, p = .008. M = mean; SD = standard deviation.

Table 7 presents the results of the one-way analysis of variance (ANOVA) conducted to examine differences in semantic development according to educational setting.
As shown in Table 7, children attending preschool achieved the highest mean score (M = 24.37, SD = 3.39), followed by children attending primary school (M = 21.15, SD = 3.27). The one-way ANOVA revealed a statistically significant difference in semantic development across educational settings, F = 5.470, p = .008.
These findings indicate that the level of semantic development varied according to educational setting. However, because no post hoc analyses were conducted, it is not possible to determine which specific groups differed significantly from one another.

Table 8 *Differences in Semantic Development According to Speech and Language Status*

Speech and Language Status	N	M	SD	F / p
Typical speech and language development	41	22.68	3.70	
Mild speech and language difficulties	6	20.83	2.23	2.454 / .045
Total	47	22.45	3.59	

Note. Statistical analysis indicated a significant difference between groups (F = 2.454, p = .045). M = mean; SD = standard deviation.

Table 8 presents the results of the analysis examining differences in semantic development according to speech-language status.
As shown in Table 8, children with typical speech-language development achieved a higher mean score on the Semantic Test (M = 22.68, SD = 3.70) than children with mild speech-language difficulties (M = 20.83, SD = 2.23). The results of the statistical analysis revealed a statistically significant difference between the two groups (F = 2.454, p = .045).
These findings indicate that semantic development varies according to speech-language status. Children with typical speech-language development demonstrated higher levels of semantic development than children with mild speech-language difficulties.

Discussion

The aim of this study was to assess the level of semantic development in six-year-old children and to examine potential differences in performance according to gender, educational setting, and speech-language status.

The results showed that children achieved the highest scores on the homonym subtest, followed by the antonym subtest, whereas lower scores were observed on the synonym and metonym subtests. These findings suggest that different semantic categories are not acquired at the same rate. Higher performance on homonyms and antonyms may be associated with their earlier acquisition and more frequent use in everyday communication, whereas understanding synonyms and especially metonyms requires a higher level of semantic and cognitive maturity. These findings are consistent with the views of Vladisavljević (1977), who emphasized that different semantic categories develop at different rates and levels of complexity.

The obtained results are also consistent with the findings of Skeide and Friederici (2016), who reported that semantic abilities develop intensively during the preschool period, as well as with Conti-Ramsden and Durkin (2012), who identified the age between five and six years as an important period for the refinement of semantic representations and the establishment of more complex relationships among concepts.

With regard to gender, no statistically significant differences were found in the level of semantic development. This finding suggests that lexical-semantic abilities develop at a similar rate in boys and girls at this age and that gender does not appear to have a significant influence on performance on the Semantic Test within the present sample.

Statistically significant differences were found according to educational setting. The highest mean scores were observed among children attending preschool institutions. The ANOVA results indicated the existence of significant differences among groups defined by educational setting. However, because no post hoc analyses were conducted, it is not possible to determine which specific groups differed significantly from one another. The observed differences may be associated with the influence of structured educational activities on language development, vocabulary enrichment, and the development of semantic abilities.

Furthermore, statistically significant differences were found according to the participants' speech-language status. Children with typical speech-language development achieved higher scores on the Semantic Test than children with mild speech-language difficulties. This finding further supports the close relationship between speech-language development and semantic development, as limitations in speech-language abilities may affect the formation and organization of semantic representations as well as the acquisition of different semantic relationships.

The findings provided partial support for the proposed hypotheses. The first hypothesis was confirmed, as differences were observed in the level of acquisition of the examined semantic categories, with homonyms and antonyms showing higher levels of acquisition than synonyms and metonyms. The second hypothesis was partially confirmed, as statistically significant differences were found according to educational setting and speech-language status, but not according to gender.

Several limitations should be considered when interpreting the findings. First, the sample was relatively small and unevenly distributed across the groups, particularly among children who were not enrolled in an educational institution and among children with speech-language difficulties. Therefore, the findings should be interpreted with caution and verified in larger and more representative samples.

Overall, the results of this study suggest that semantic development in six-year-old children is associated with characteristics of the educational environment and speech-language status,

whereas gender does not appear to be significantly related to performance on the Semantic Test.

Conclusion

The results of this study demonstrated that semantic development in six-year-old children is not equally developed across all semantic categories. The highest levels of performance were observed on the homonym and antonym subtests, whereas lower scores were obtained on the synonym and metonym subtests, indicating differences in the rate of acquisition of various aspects of semantic knowledge. The overall score on the Semantic Test exceeded its theoretical midpoint, suggesting age-appropriate lexical-semantic abilities among the participants.

No statistically significant differences in semantic development were found according to gender. In contrast, statistically significant differences were identified according to educational setting and speech-language status. The highest mean scores were observed among children attending preschool institutions, whereas children with typical speech-language development achieved higher scores than children with mild speech-language difficulties.

The findings highlight the importance of the educational environment and speech-language development in the acquisition and development of semantic abilities during the preschool years. Furthermore, the results emphasize the need for ongoing monitoring of lexical-semantic development and for the early identification of children at risk for speech-language difficulties in order to provide appropriate support and intervention prior to the beginning of formal education.

Future research should include larger and more representative samples and should provide a more detailed examination of the factors influencing the development of different semantic categories in preschool children.

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