

The comparison of word definitional ability between monolingual and bilingual (Greek - Turkish) speakers of Thrace

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Abstract

The purpose of this study was to investigate (a) the preferred definition type produced by Greek monolingual and Turkish-Greek bilingual speakers of Thrace, (b) their definitional ability (c) the effect of semantic characteristics, grammatical categories and morphological structure of words and finally (d) the effect of variables such as, age (school-age children, university students and adults), gender, adult educational level and career orientation (humanities vs medical science) on definition productions. The sample consisted of 368 individuals, 184 monolingual speakers of Greek and 184 bilingual speakers (L1 Turkish, L2 Greek) who were asked to define 16 words orally. The results indicated that bilinguals produced more formal definitions than monolinguals. More specifically, concrete nouns were better defined than abstract while in simple words were used more formal definitions, both in monolingual and bilingual groups. Monolingual speakers used more formal definitions in verbs while bilinguals used more formal definitions in adjectives. Concerning the age, both in monolingual and bilingual group, females outperformed males in respect to the content of definitions. Concerning the career orientation, students in Medical science produced more formal definitions than other groups. This was also observed in bilingual group. The results of this study expand the extant literature on definitional skill development.

Keywords: definitional ability, monolingual speakers, bilingual speakers, language development

1. Introduction

The word definitional ability is an important linguistic skill that starts from early childhood and continues into adulthood. According to literature review (Benelli et al., 1988; Snow, 1990; McGhee-Bidlack, 1991; Johnson & Anglin, 1995; Kurland & Snow, 1997; Nippold et al., 1999; Marinellie & Johnson, 2003; Benelli et al., 2006; Caramelli, Borghi & Setti, 2006; Chan & Marinellie, 2007; Dourou 2020; Dourou, 2019, 2020; Dosi, 2020), students develop language skills, learn new vocabulary, categorize words in superordinate concepts, pass from the concrete to the abstract level and they improve themselves to the syntax of sentences. Besides the positive impact of language teaching in school environment on word definition ability, there is also a range of factors that effects on the improvement of this skill. Previous studies (Walker, 2001; Benelli et al., 2006; Dourou, 2019; Dourou, Gavriilidou & Markos, 2020) have shown that gender, education level and career orientation affect the way speakers of a language define words.

The literature (Gollan, Montoya, Fennema-Notestine & Morris, 2005; Ivanova & Costa, 2008; Luo, Luk & Bialystok, 2010; Paap, Myuz, Anders, Bockelman, Mikulinsky & Sawi, 2017; Prior & MacWhinney, 2010) has shown linguistic differences between monolingual and bilingual speakers. Previous studies revealed bilingual disadvantages in various linguistic tasks (Gollan et al., 2005; Rosselli, Ardila, Araujo, Weekes, Caracciolo, Padilla & Ostrosky-Solí, 2000). According to Michael & Gollan, (2005), bilingualism seems to decline when a bilingual speaker reduces the usage of both languages or when the L2 is acquired at a later age. Definitional ability of bilingual speakers is less examined. More specifically, Charkova (2005) compared Bulgarian students, 40 monolinguals, 40 bilinguals (L1 Bulgarian, L2 English) and 40 trilinguals (L1 Bulgarian, L2 English, L3 Russian) in their ability to define words. The findings of her study showed that bilingual and trilingual children outperformed monolinguals and she also found that the achievement of word translation from L1 to L2 / L3 depends on the typology of languages. By contrast, Kang (2013) studied the word definitional ability of Korean-English bilingual children and the results designated that the participants of his study provided better definitions in their home language than in their school language. Finally, the most recent study (Dourou & Dosi 2021) showed that 79 monolingual school students (L1 Greek) outperformed 79 bilingual school students (L1 Turkish, L2 Greek) concerning the content of definitions in all grammatical categories. Their finding further supports that the production of formal definitions exhibits in Junior High school, while it takes more time for this pattern to emerge in bilinguals (i.e. in senior high school).

As could be seen from the literature, there is a lack of studies (Charkova 2005; El Euch 2007; Dourou & Dosi 2021) compared monolingual with bilingual individuals in their ability to define words and no studies have examined the effect of a wide range of ages, the role of career orientation and education level on word definition productions as well as the effect of semantic and morphological characteristics in the development of definitions.

2. Research questions and hypotheses

Taking into consideration previous gaps in the literature review, the purpose of the present study aims to provide new insights about variation in definitional skills and preferred definition types of Greek monolingual speakers and Turkish-Greek bilingual speakers and how these differentiate according to assorted variables.

The first aim was to investigate the definitional types in content and form preferred by the monolingual and bilingual sample in total and, also, to examine the preferred definition types per age/educational level group, university student career orientation and adult educational level. Based on previous literature (Johnson & Anglin, 1995; Skwarchuk & Anglin, 1997; Marinellie & Johnson, 2003; Gavriilidou, 2015; Dourou, Gavriilidou & Markos 2020; Dourou & Dosi 2021), it is expected monolingual school students to provide mid-level responses in content (Relation, Class non-specific, Class specific and Synonym) and in form (Phrase, Clause or Simple Sentence, Transitional form) while an upward trend in definition productions is, also, expected during schooling (Dourou 2019) while it is predicted that educated adults and university students would provide Aristotelian or partially Aristotelian definitions in content and form. Based on previous literature (Snow et al., 1991; Lee, 2005; Kang, 2013), it is expected that bilingual students would produce better definitions in form, since form is related to metalinguistic skills. In content, it is assumed that bilinguals' performance would be lower than monolinguals, due to their lower language proficiency in Greek.

The second aim was to study the total score of correct definitions in content and form per age category for monolingual and bilingual sample. Specifically, and consistently with the literature on the development of definitional skills (Dourou, 2019; Dourou & Dosi 2021), it is believed that monolinguals would outperform bilinguals (in content and form) and both samples would provide a gradual process in definition productions because the development of word definitions and vocabulary improvement are, also, methods that are enriched in classrooms.

The third aim was to analyze the effect of semantic characteristics of words on definitions of monolingual and

bilingual sample. As previous literature suggested (McGhee-Bidlack, 1991; De Groot, 1992; Johnson & Anglin, 1995; Sadoski, Kealy, Goetz & Paivio, 1997; Nippold et al., 1999; Dourou, 2019), it is expected that concrete nouns would be better defined compared to abstract nouns, both by monolingual and bilingual group, because the definitions of concrete nouns were more precise due to their superordinate and subordinate connections with other nouns.

The fourth aim was to study the effects of word structure (simple and compounds) on word definitions. Due to the lack of literature (Dourou 2019), it is predicted that participants would provide better definitions in simple than in compound words. This is justified because the words in her study belong to the basic vocabulary of the students and they have high frequency. No previous research investigated so far how morphological structure interacts with other variables during word definition productions.

The fifth aim was to investigate the effect of grammatical categories (nouns, verb, adjectives) on word definitions, both in monolingual and bilingual sample. Specifically, and consistently with the literature on the effects of the grammatical categories of words on definitional skills (Markowitz & Franz, 1988; McGhee-Bidlack, 1991; Nippold et al., 1999; Johnson & Anglin, 1995; Gavriilidou, 2015; Dourou, 2019), it is assumed that monolinguals would outperform bilinguals in all grammatical categories, due to their increased vocabulary knowledge (Marinellie & Johnson, 2002). In addition, we expected that nouns would be better defined compared to adjectives and verbs (as previous studies suggested Johnson & Anglin, 1995; Gavriilidou, 2015; Dourou, 2019) because they contain more hyperonyms and more precise and formal semantic content compared to verb and adjectives definitions. On the contrary, we assumed that verbs and adjectives would be more difficult due to their non-hierarchical structure and would not contain relative clauses, such as nouns.

The last aim was to examine gender, age, education level and career orientation on the performance of definitions between monolingual and bilingual speakers. Taking into consideration previous literature (Storck & Looft, 1973; Litowitz, 1977; Wehren, Delisi, & Arnold, 1981; Watson, 1985; Benelli et al., 1988; Snow, 1990; Johnson & Anglin, 1995; Nippold, 1995) on the development of definitional skills it is expected that University students would outperform school pupils and adults. Moreover, it is assumed that female students would outperform male students in the definition of content and form, both in monolingual and bilingual sample (Huttenlocher, Haight, Bryk, Seltzer, & Lyons, 1991). In addition, based on the literature investigating the metalinguistic components implied in definitional tasks (Wehren et al., 1981; McGhee-Bidlack, 1991), it is believed that monolingual Adults would outperform bilingual Adults because a large number of uneducated bilinguals have not acquired the basic vocabulary in L2. Finally, according to Dourou (2019) and Dourou, Gavriilidou and Markos (2020) it is predicted that students of Medical Sciences would perform better than students of Humanities because during their studies they are systematically exposed -already from the first year- to the use of medical terminology. It is, also, expected that monolingual university students would outperform bilinguals. This fact acquaints them with the content and formal properties of definitions.

3. Methodology

3.1 Participants

The study sample comprised 368 individuals, 184 monolingual speakers of Greek and 184 bilingual speakers (L1 Turkish, L2 Greek). From this sample, 162 were males (44%) and 206 were females (56%) of different age groups, from upper elementary school-age children to adults recruited through random sampling procedures. All participants were Thrace residents from the regions of Evros. Table 1 presents the sample characteristics by age and gender.

Table 1. Characteristics of ML and BL across gender, age/educational level, career orientation and university education

Groups	Gender		Total
	Male	Female	
Upper Elementary (9-11 years old)	30	26	56
Junior High students (13-15 years old)	20	18	38
Senior High students (15-17 years old)	32	32	64
University students (19-24 years old)	40	70	110
<i>in Humanities</i>	16	44	30
<i>in Medical Science</i>	22	26	48
Adults (above 32 years old)	40	60	100
<i>with university education</i>	18	32	50
<i>without university education</i>	22	28	50
Total	162	206	368

3.2 Stimuli and procedures

To ensure a valid and reliable measurement, the methodology adopted were similar to those used in the study of Marinellie & Johnson (2002, 2004) and previously adapted in Greek and applied in Gavriilidou (2015), Dourou (2019), Dourou et al. (2020), Dosi and Gavriilidou (2020). The definition task included sixteen 16 words. According to their grammatical category, 8 were nouns (*erotisi* 'question', *taksiði* 'journey', *iáovasilema* 'sunrise', *makrozoia* 'longevity', *tiropita* 'cheese pie', *maçeropiruno* 'cutlery', *milo* 'apple', *poðilato* 'bicycle') 4 were verbs (*aniyoklino* 'open and close', *siyotrayuðo* 'hum', *ðjavazo* 'read' *xorevo* 'dance'), and 4 were adjectives (*aspromavros* 'black-and-white', *γlikoksinos* 'sweet-sour', *eksipnos* 'intelligent', *astios* 'funny'). Referring to their semantic characteristics, 4 of them were abstract (*erotisi* 'question', *taksiði* 'journey', *iáovasilema* 'sunrise', *makrozoia* 'longevity') and 4 of them were concrete (*tiropita* 'cheese pie', *maçeropiruno* 'cutlery', *milo* 'apple', *poðilato* 'bicycle'). Finally, in line with their mode of construction, 8 of them were simple (*erotisi* 'question', *astios* 'funny', *xorevo* 'dance', *taksiði* 'journey', *milo* 'apple', *poðilato* 'bicycle', *eksipnos* 'intelligent', *ðjavazo* 'read') and 8 were compounds (*iáovasilema* 'sunrise', *makrozoia* 'longevity', *tiropita* 'cheese pie', *maçeropiruno* 'cutlery', *aspromavros* 'black-and-white', *γlikoksinos* 'sweet-sour', *aniyoklino* 'open and close', *siyotrayuðo* 'hum').

According to their frequency, 10 of the 16 words were identified through the Textbooks of the Modern Greek Language of Elementary School, Junior and Senior High School and the remaining were included from Gavriilidou's (2015) research. In order to check words' frequency, the textbooks were transformed into text files (txt) and they were introduced in the AntConc 3.5.0 program, in order to create word frequency lists.

During the process, the questionnaire was administered orally by the author of this paper to each monolingual and bilingual speaker, without the presence of other individuals. It was deemed necessary to orally provide the instrument since oral administration decreased the risk of copying a definition through electronic or printed dictionaries. Data collection lasted 9 months (February-October 2020). The study was approved by the Ethics Committee of the Department of Greek of Democritus University of Thrace. Because children are involved in the study written consent was obtained by the legal guardians.

3.3. Scoring of data: Content and Form

The scoring methodology of Marinellie and Johnson (2002) was adopted for the needs of the present study. Content and form scoring is displayed in Table 2. Definitions were scored on a five-point scale along a continuum, consistent with a developmental progression suggested in previous literature. The highest possible noun content score for any participant was 80 points (16 words per participant, with a maximum of 5 points per word). The total number of definitions from the 368 participants was 5888 definitions (368 x 16).

Definitions were scored on a six-point scale along a continuum, from a minimum of 0 to a maximum of 5, to be consistent with a developmental progression suggested in previous literature. Low-level responses were *Function*, *Description*, *Example*, *Association*, *Tautology* (for content categories) and *Single Word or Article + Word* (for form categories). Mid-level responses were *Relation*, *Class non-specific*, *Class specific*, *Synonym* (for content categories) and *Phrase*, *Clause*, or *Simple Sentence*; *Transitional* (for form categories). High-level responses included *Combination I and II*, *Lexicographic definition*, *Aristotelian definition* (for content categories) and *Partial Aristotelian*, *Aristotelian form* (for form categories).

Table 2. Scoring Scheme used for the Content Categories

		Score	Example
Content categories	Error	0	<i>miło</i> [apple : ice-cream]
	Functional / Descriptive definition/ Example/Association/Tautology	1	<i>tiropita</i> [cheese pie: you devour it]
			<i>diavazo</i> [read: I open the book and say the words aloud]
			<i>erotisi</i> [question: what you are doing now]
			<i>aniyoklino</i> [open and close: for example, open and close the window]
			<i>iłovasilema</i> [sunrise: sunrise in Santorini]
	Relation-Self-reference / Class non-specific	2	<i>eksipnos</i> [intelligent: that's me]
			<i>poðilato</i> [bicycle: a thing]
	Class specific / Synonym	3	<i>miło</i> [apple: fruit]
			<i>eksipnos</i> [intelligent: clever]
Combination I	4	<i>miło</i> [apple: a thing that is red and round]	
Combination II/ Lexicographic definition/ Aristotelian definition	5	<i>poðilato</i> [bicycle: means of transport with a steering wheel, saddle and pedal]	
		<i>diavazo</i> [read: look at the words and understand their meaning]	
		<i>erotisi</i> [question: an utterance which typically functions as a request for information, which is expected to be provided in the form of an answer]	
Form categories	Nonverbal	0	participant demonstrates use of object or points to
	Single Word or Article + Word	1	<i>iłovasilema</i> [sunrise: evening]
	Phrase, Clause or Simple Sentence	2	<i>miło</i> [apple: we bite it]
	Transitional form (use of "something" or "thing")	3	<i>erotisi</i> [question: something that wants to answer]
	Partial Aristotelian form	4	<i>poðilato</i> [bicycle: a thing]
	Aristotelian form	5	<i>tiropita</i> [cheese pie: a kind of pie that has cheese inside]

3.4. Reliability (content and form)

Interrater reliability of content coding was evaluated for all responses given by 74 subjects. This refers to 20% of the data (1177 definitions). Identically coded responses were considered an agreement. The two raters were the first author and a post-doc researcher of the Department of Greek Philology of the Democritus University of Thrace. The investigator's grade was hidden from the post-doc researcher. The percentage of agreement was calculated by dividing the number of responses coded identically by the total number of coded responses (1177 definitions). For the content of the responses, 985 common responses were recorded indicating an inter-rater agreement of 83.6%. Inter-rater reliability of form coding was evaluated for all responses in the same way as content coding. For the form of the responses, 1021 common responses were recorded indicating an inter-rater agreement of 86.7%.

4. Data Analysis

All analyses were run in SPSS25©. Kolmogorov-Smirnov normality test exhibited a normal distribution for all the variables used in the present study. Four multivariate analyses of variance (MANOVA) were conducted to check the effect of group (monolinguals vs. bilinguals) and a) gender, b) age group, (c) educational level, and d) career orientation on overall definitions for content and form. In order to test the effect of grammatical categories, semantic characteristics and morphological structure six two-way Repeated Measures ANOVA were conducted check the effect of group (monolinguals vs. bilinguals) and a) gender, b) age group, (c) educational level, and d) career orientation on the aforementioned variables separately for content and form. If interactions were detected simple One-way ANOVAs or paired-samples t-tests were performed. Bonferroni post hoc multiple comparison tests were applied in the ANOVAs and MANOVAs to check "Within-variable" differences when needed.

5. Results

5.1 Frequency of definition type (Content) by ML and BL sample

The descriptive statistics (frequencies) of the data showed that the most common type of content definition by monolingual sample is Combination I (31.6 %) and Functional/ Descriptive/ Example/ Association/ Effect/ Tautology (33 %) are included among the highest preferences of all age monolingual groups ($n = 184$). Class specific definitions were provided by the 17.3 %, followed by Relation/Self-Reference and Class nonspecific (10.6 %) and Combination II/Aristotelian definition answers (7.4 %). Finally, error definitions were provided only by 1.6%.

More specifically, Upper Elementary students seem to provide Functional/ Descriptive/ Example/ Association/ Effect/ Tautology definitions when asked to define words. A large percentage of them tend to define words with Combination I followed by the categories of Class specific/Synonym. The lowest rate of responses is concentrated on Errors and Aristotelian definitions. Junior and Senior High school students use mainly the categories Combination I and Functional/ Descriptive/Example/ Association/ Effect/ Tautology definitions when they define words. More rarely, they define words using Aristotelian definitions. The most frequent category for University students is Combination I (use of Class-Specific or Synonym and at least one specifying attribute such as Function, Concrete, etc.). Finally, Adults prefer to define words with Functional/ Descriptive/ Example/ Association/ Effect/ Tautology definitions while in less use are the categories Combination II/Aristotelian definition.

Table 3. Frequency of definition types in content by monolingual sample

Age groups	Errors	Functional or Descriptive definition/Example/Associati	Relation/Self reference/Class nonspecific	Class specific/Synonym	Combination I	Combination II/Aristotelian definition	Total
Upper Elementary	15	252	31	56	123	12	489
Junior High students	6	96	33	59	122	16	332
Senior High students	24	148	83	64	209	31	559
University students	1	186	74	174	352	154	941
<i>Humanities</i>	0	108	65	101	194	44	512
<i>Medical Science</i>	1	78	9	73	158	110	429
Adults (above 32 years old)	6	373	119	202	153	22	875
<i>with university education</i>	0	147	44	119	123	20	453
<i>without university education</i>	6	226	75	83	30	2	422
Total	52	1055	340	555	959	235	3196
%	1.6	33	10.6	17.3	31.6	7.4	100

The descriptive statistics (frequencies) suggested that the most common type of definition in content by bilingual sample is Functional/ Descriptive/ Example/ Association/ Effect/ Tautology (43.7%). The categories Combination I (21.5%) and Class specific/Synonym (13.9%) are placed in the mid-preferences of the participants in this research. In the low-preferences is Relation/Self reference/Class nonspecific (9.3%) The Combination II and Aristotelian definition is the least preferred types. Finally, 7.4% of the sample provided nonverbal answers to word definitions.

When it comes to content, as Table 4 indicates, most of the bilingual participants provided low-level responses (i.e. functional definitions). It is worth noting, that University students and specifically students in Medicinal Science were differentiated from the other groups and used high-level responses (i.e. combination). Finally, as we can see from Figure 1, over 50% of bilinguals produced low-level responses, while the same rate of monolingual sample provided mid and high-level responses.

Table 4. Frequency of definition types in content by bilingual sample

Age groups	Errors	functional definition/ descriptive definition/example/associati	Relation/Self reference/Class nonspecific	Class specific/Synonym	Combination I	Combination II/Aristotelian definition	Total
Upper Elementary	38	325	26	30	60	8	487
Junior High students	9	200	41	34	45	5	334
Senior High students	53	197	65	56	159	27	557
University students	27	277	90	182	298	82	956
<i>Humanities</i>	22	195	70	87	127	21	522
<i>Medical Science</i>	5	82	20	95	171	61	434

Adults (above 32 years old)	106	403	77	145	128	11	870
with university education	10	157	56	109	111	7	450
without university education	96	246	21	36	17	4	420
Total	233	1402	299	447	690	133	3204
%	7.4	43.7	9.3	13.9	21.5	4.1	100

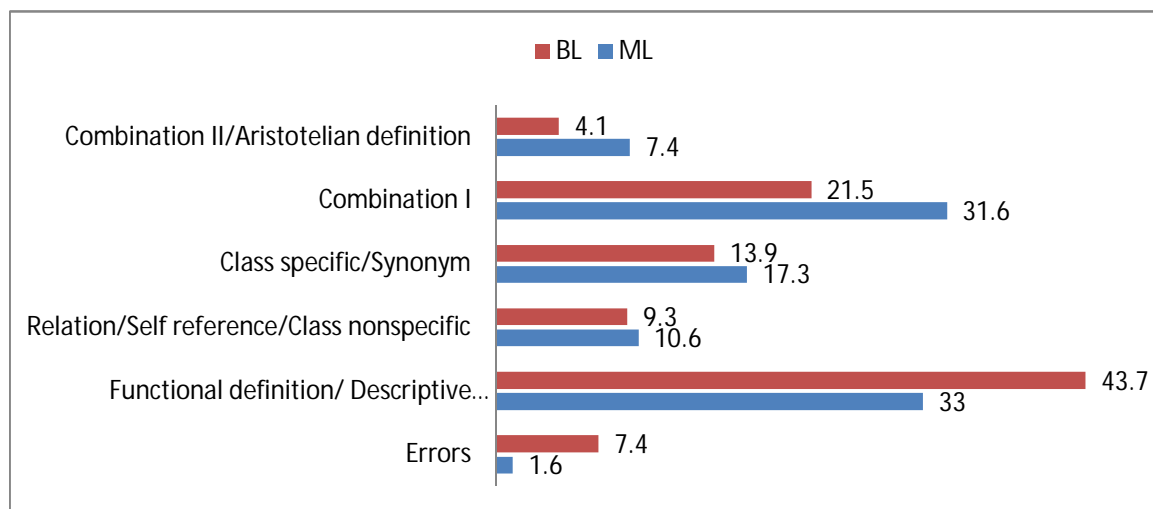


Figure 1. Frequency of definition types in content by all samples.

5.2. Frequency of definition types (Form) by ML and BL sample

The descriptive statistics (frequencies) suggested that the most common type of definition in form by bilingual sample is the Phrase/Simple Clause (39.3%), followed by the Partial Aristotelian definition (30.1%), while these categories are inverse (Partial Aristotelian definition, 40.1% and Phrase/Simple Clause 31.9%) in the preferences of monolingual sample. The categories Transitional Form and One Word or Article + Word are placed in the mid-preferences of monolingual and bilingual participants in this research. The Aristotelian form is the least preferred type for both categories. Finally, a low rate of the sample provided nonverbal answers to word definitions.

More specifically, according to monolingual group, the larger percentage of Upper Elementary students tend to prefer Phrase / Simple Clause (e.g. apple: “you can eat it”) for their definitions. But as we can see in the Table 5, the responses of all other groups are more focused on Partial Aristotelian Form (e.g. bicycle: “a form of transport”). Additionally, the categories with the lower rates among all age groups of monolingual sample are the Nonverbal definitions. The frequency of definition types in form by bilingual sample was differentiated. For school students (Upper Elementary, Junior High school and Senior High school) the most frequent category was Phrase, Clause, or Simple Sentence while for University students in Medical Science and educated Adults the most frequent category is Partial Aristotelian form.

Table 5. Frequency of definition types in form by monolingual sample

Age groups	Nonverbal	Simple word/Article+ word	Phrase/Simple Clause	Transitional Form	Partial Aristotelian Form	Aristotelian Form	Total
Upper Elementary	11	14	234	55	159	15	488
Junior High students	5	11	96	41	154	23	330
Senior High students	28	41	169	39	243	35	555
University students	8	46	202	78	446	164	944
<i>Humanities</i>	4	43	120	44	258	49	518
<i>Medical Science</i>	4	3	82	34	188	115	426
Adults (above 32 years old)	11	167	289	74	304	26	868
<i>with university education</i>	3	60	124	35	207	25	454
<i>without university education</i>	8	107	165	39	94	1	414
Total	63	279	990	287	1306	263	3188
%	1.9	8.8	31.9	9.1	40.1	8.2	100

Table 6. Frequency of definition types in form by bilingual sample

Age groups	Nonverbal	Simple word/Article+ word	Phrase/Simple Clause	Transitional Form	Partial Aristotelian Form	Aristotelian Form	Total
Upper Elementary	35	34	306	32	80	6	493
Junior High students	8	29	191	30	71	2	331
Senior High students	57	17	215	52	189	33	563
University students	18	67	202	78	398	164	952
<i>Humanities</i>	17	53	190	55	180	28	523
<i>Medical Science</i>	1	14	82	48	218	66	429
Adults (above 32 years old)	106	98	352	57	238	26	868
<i>with university education</i>	9	57	146	34	194	11	451
<i>without university education</i>	97	41	206	23	44	4	415
Total	224	245	1266	249	976	231	3191
%	7.1	7.6	39.3	7.8	30.1	7.2	100

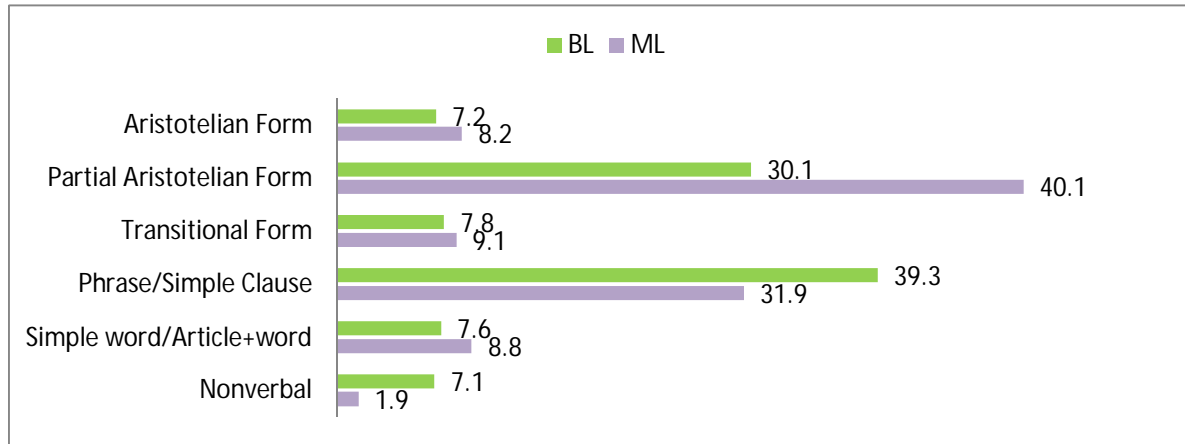


Figure 2. Frequency of definition types in form by all samples.

5.3. The total score of correct definitions per age group for ML and BL speakers

There was a main effect of age ($F(1, 368) = 63.685, p < .001, \eta^2 = .151$, form: $F(1, 368) = 55.427, p < .001, \eta^2 = .134$) and language group (content: $F(4, 368) = 44.475, p < .001, \eta^2 = .332$, form: $F(4, 368) = 34.420, p < .001, \eta^2 = .278$), but no interaction of the two variables was found (content: $F(4, 368) = 1.821, p = .124, \eta^2 = .020$, form: $F(1, 368) = 1.785, p = .131, \eta^2 = .020$). Bonferroni criteria showed that monolinguals produced more formal definitions than bilinguals. Comparisons between age groups showed that Upper Elementary school students performed similarly to Adults, both in content and form ($p = 1$ for the two comparisons), and they exhibited similar performance to Junior High school students only in form ($p = .123$). Junior High school students performed similarly to Senior High school students and adults, both in content ($p = .087$ και $p = .559$, respectively) and form ($p = 1$ και $p = .063$, respectively). Senior High school students produced more formal definitions than Adults (content: $p < .001$ and form: $p = .001$). Finally, the University students scored higher compared to all the other groups in both content and form ($p < .001$, for all comparisons).

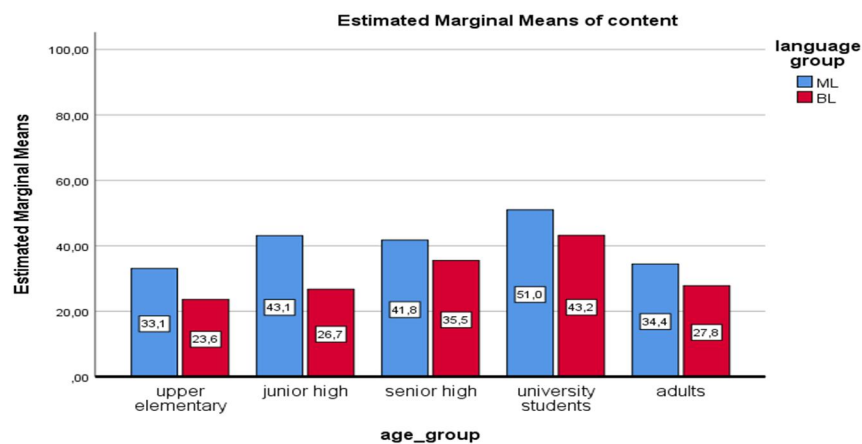


Figure 3. Total score of correct definitions in content per age group for ML and BL speakers

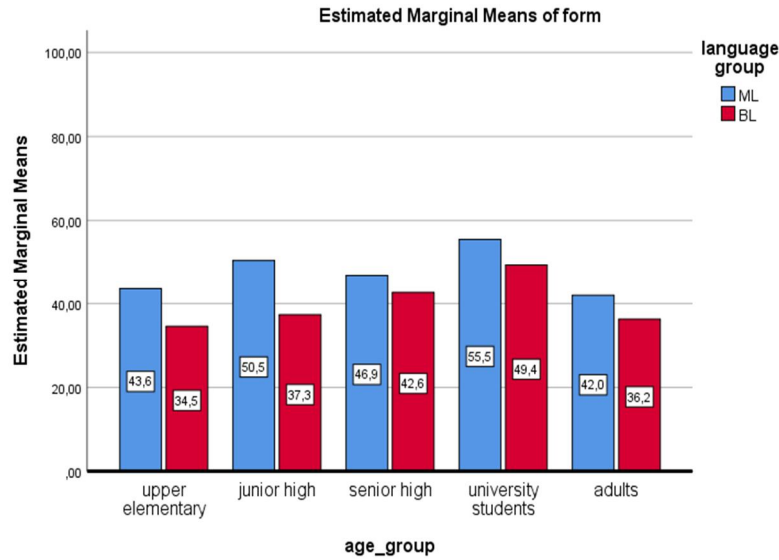


Figure 4. Total score of correct definitions in form per age group for ML and BL speakers

5.4. The effect of the semantic characteristics of words on definitions between ML and BL speakers (content and form)

The results in content and form (cf. Figure 5) have revealed that there was a statistically significant interaction between the effect of language group and semantic characteristics of words ($F(1, 366) = 7.216, p = .008, \eta^2 = .019$) and also a main influence of the language group ($F(1, 366) = 42.906, p < .001, \eta^2 = .105$). More specifically, Bonferroni criteria showed that monolinguals produced more formal definitions than bilinguals ($p < .001$). In addition, it appeared that the concrete nouns were better defined than the abstract ones, both in terms of content and form ($p < .001$, for all comparisons), by both groups.

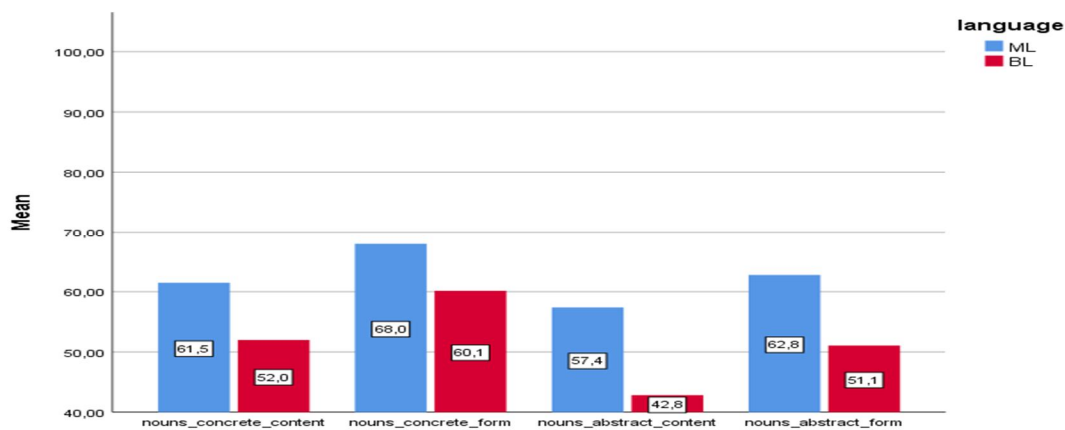


Figure 5. Groups' scores (in content and form) regarding semantic characteristics.

5.5. The effect of the word structure on definitions between ML and BL speakers (content and form)

A two-way ANOVA was conducted that examined the effect of language group and morphological structure of the words. There was a statistically significant interaction between the effects of language group and morphological structure of words ($F(1, 366) = 11.871, p = .001, \eta^2 = .031$) and a main influence of the language group ($F(1, 366) = 42.906, p < .001$,

$\eta^2 = .105$). Bonferroni criteria showed that monolinguals produced more formal definitions than bilinguals ($p < .001$). In addition, it appeared that simple words used more formal definitions than compounds from both groups, both in terms of content and form ($p < .001$, for all comparisons).

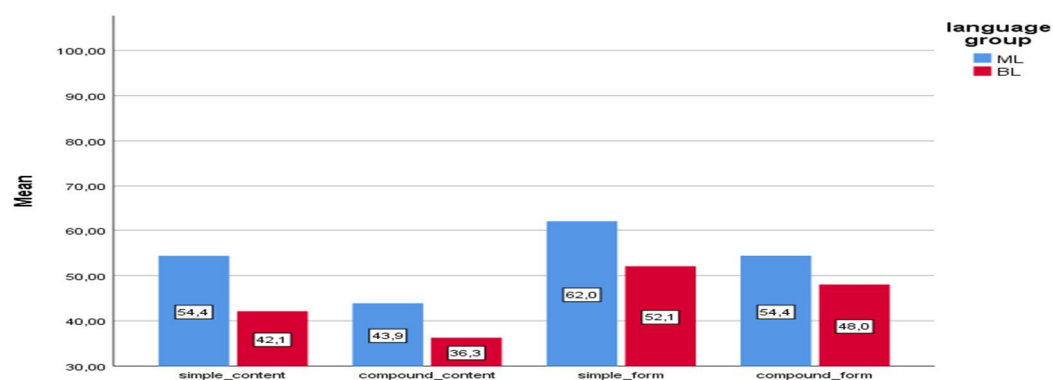


Figure 6. Groups' scores (in content and form) regarding the mode of construction of words.

5.5. The effect of grammatical category of words on definitions between ML and BL speakers

The results of the multivariate analysis of variance (MANOVA) showed an interaction between the language group and the grammatical category ($F(2, 732) = 28.241$, $p = .001$, $\eta^2 = .072$) and also showed a main influence of the language group ($F(1, 366) = 127.442$, $p < .001$, $\eta^2 = .258$). More specifically, monolinguals performed better definitions than bilinguals, both in content and form ($p < .001$). However, analyzing the results of each group there are differences. Thus, monolinguals produced more formal definitions in nouns and adjectives than in verbs, both in content and form (content: $t(183) = 4.155$, $p < .001$, $t(183) = -4.429$, $p < .001$, respectively · form: $t(183) = 2.923$, $p = .004$, $t(183) = -4.084$, $p < .001$, respectively). While the last two categories do not differ from each other (content: $t(183) = 1.569$, $p = .118$ · form: $t(183) = .631$, $p = .529$). On the contrary, the results have shown that adjectives were better defined than nouns (content: $t(183) = 7.089$, $p < .001$ · form: $t(183) = 11.541$, $p < .001$) and verbs (content: $t(183) = 5.163$, $p < .001$ · form: $t(183) = -3.649$, $p < .001$) by the bilingual group. Respectively, the verbs use more formal definitions than the nouns (content: $t(183) = -4.104$, $p < .001$ · form: $t(183) = -9.426$, $p < .001$).

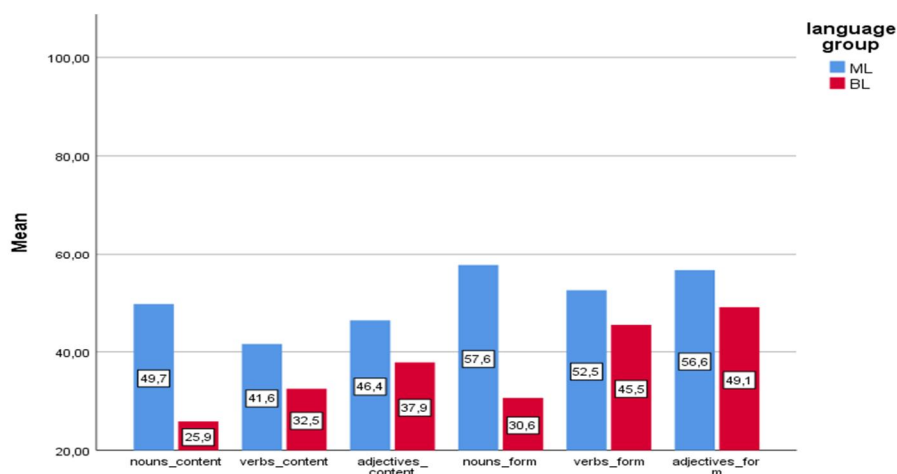


Figure 7. Groups' scores (in content and form) regarding grammatical categories.

5.5. The effect of gender, age, career orientation and education level on definitions between ML and BL speakers

It was found a main effect of gender (content: $F(1, 368) = 38.043, p < .001, \eta^2 = .095$ · form: $F(1, 368) = 35.100, p < .001, \eta^2 = .088$) and language (but only in content: $F(1, 368) = 5.912, p = .016, \eta^2 = .016$ · form: $F(1, 368) = 2.235, p = .136, \eta^2 = .006$), but no interaction between the two variables (content: $F(1, 368) = .571, p = .450, \eta^2 = .002$ · form: $F(1, 368) = .602, p = .438, \eta^2 = .002$). Bonferroni criteria showed, as depicted in Figures 8 and 9, that in both groups females used more formal definitions than males, but only in terms of content.

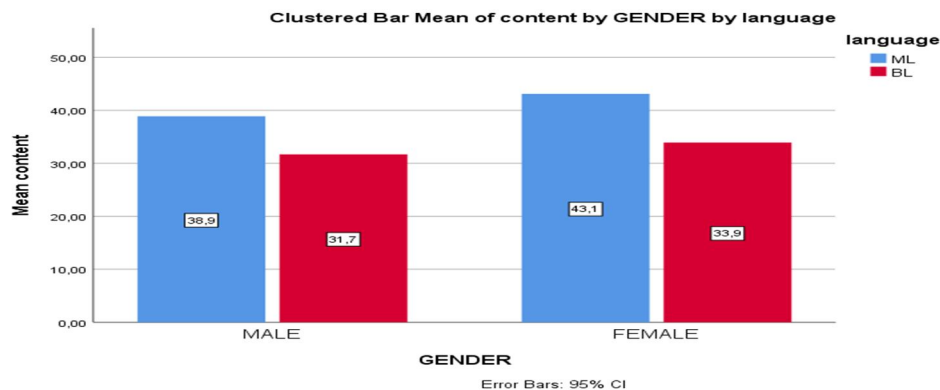


Figure 8. Mean gender differences on the content of definitions between ML and BL group

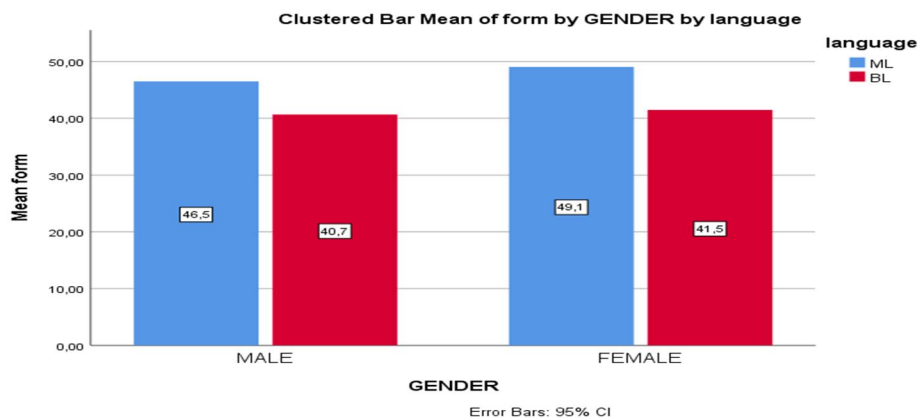


Figure 9. Mean gender differences on the form of definitions between ML and BL group

In addition, it was found a main effect of language and education level, both in content and form ($F(1, 354) = 87.230, p < .001, \eta^2 = .198$ · $F(1, 354) = 76.523, p < .001, \eta^2 = .178$ · respectively) ($F(6, 354) = 64.134, p < .001, \eta^2 = .521$ · $F(6, 354) = 55.952, p < .001, \eta^2 = .487$ · respectively), but also an interaction between these two variables ($F(6, 354) = 2.844, p = .010, \eta^2 = .046$ · $F(6, 354) = 2.473, p = .023, \eta^2 = .040$).

More specifically, Bonferroni criteria showed that differences were found (a) between monolinguals and bilinguals in Upper Elementary and Junior High school students (content: $F(1, 55) = 31.141, p < .001$ and form: $F(1, 55) = 35.682, p < .001$ · content: $F(1, 37) = 104.188, p < .001$ and form: $F(1, 37) = 79.923, p < .001$), (b) between monolinguals and bilinguals in Humanities students (content: $F(1, 59) = 19.847, p < .001$ and form: $F(1, 59) = 15.359, p < .001$), (c) between monolinguals and bilinguals in Adults without educational level (content: $F(1, 47) = 40.038, p < .001$ and form:

F (1, 47) = 16.328, p < .001), (d) between monolinguals and bilinguals in medical students, but only in the form of definitions (content: F (1, 49) = 3.880, p = .055, form: F (1, 49) = 6.196, p = .016). In contrast, differences between monolingual and bilingual speakers were not found in Senior High school students (content: F (1, 63) = 4.100, p = .047, form: F (1, 63) = 2.570, p = .114), and in Adults without education level (content: F (1, 51) = 1.294, p = .261, form: F (1, 51) = 1.442, p = .235).

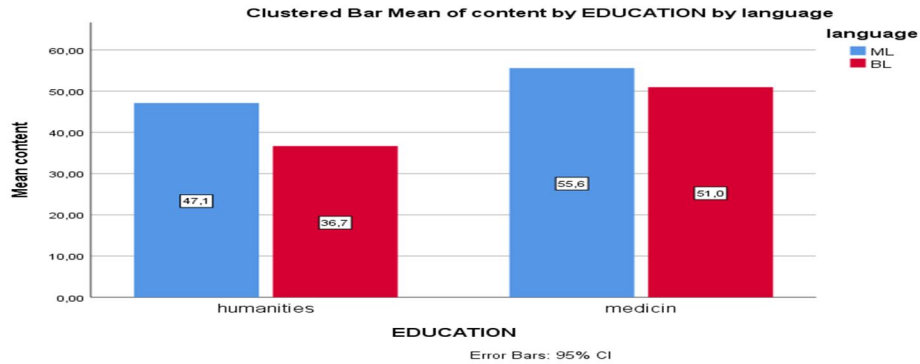


Figure 10. Mean differences on the content of definitions by university student career orientation between ML and BL group

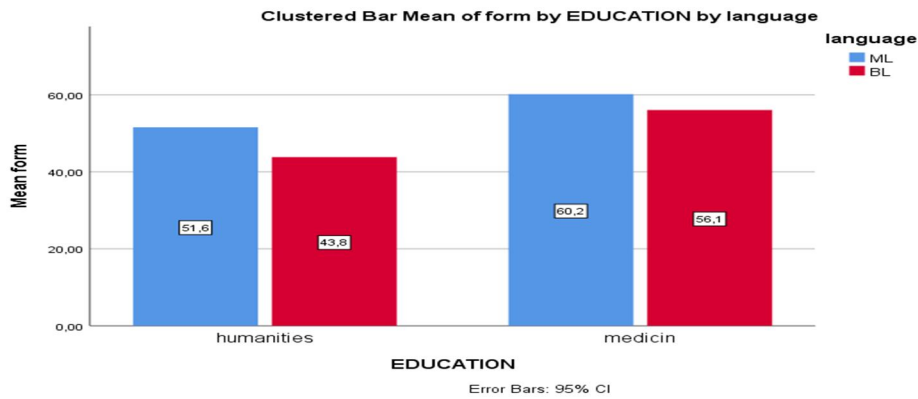


Figure 11. Mean differences on the form of definitions by university student career orientation between ML and BL group

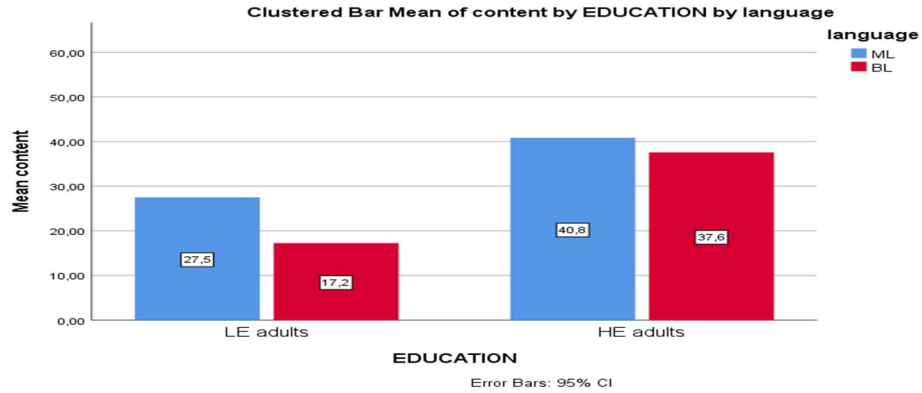


Figure 12. Mean differences on the content of definitions by adult education between ML and BL group

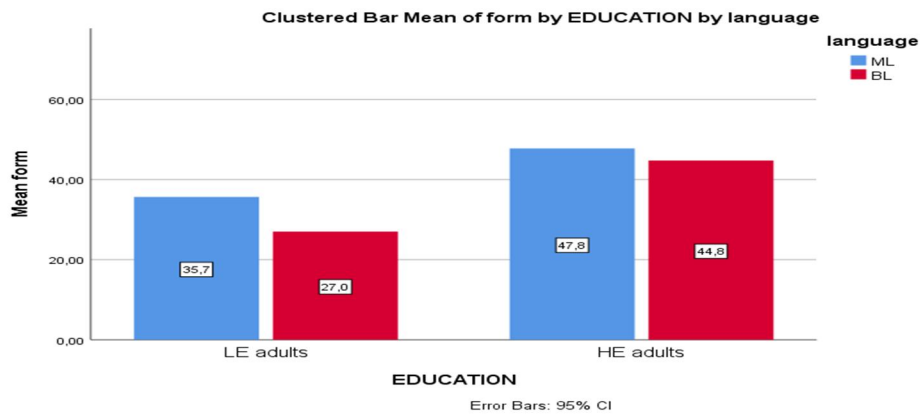


Figure 13. Mean differences on the form of definitions by adult education between ML and BL group

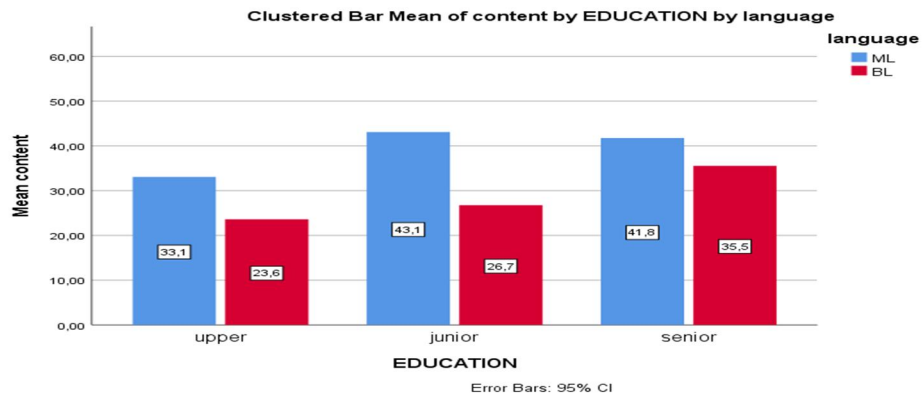


Figure 14. Mean age differences on the content of definitions between ML and BL group

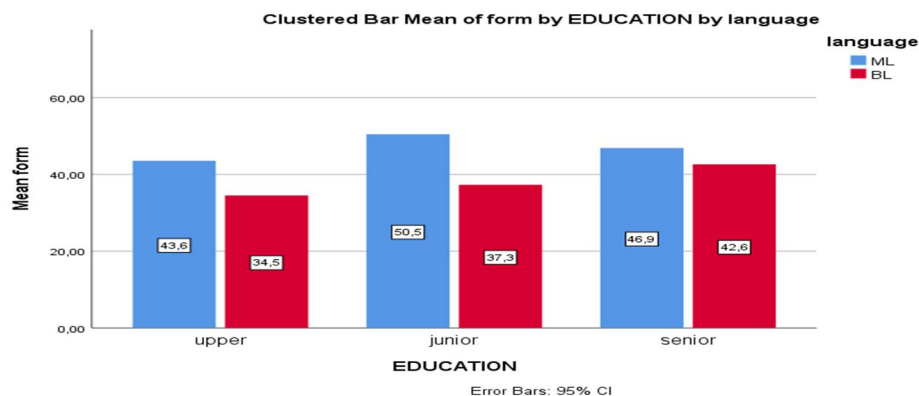


Figure 15. Mean age differences on the form of definitions between ML and BL group

6. Discussion

The purpose of the present study was to investigate (a) the preferred definition type produced by Greek monolingual and Turkish-Greek bilingual speakers of Thrace, (b) their definitional ability (c) the effect of semantic characteristics, grammatical categories and morphological structure of words and finally (d) the effect of variables such as, age (school-age children, university students and adults), gender, adult educational level and career orientation (humanities vs medical science) on definition productions

6.1 Preferred definition type by ML and BL speakers

The first aim of this paper was to investigate the more frequent definitional types in content and form used by all sample. Our hypothesis was that monolingual school students would provide mid-level responses in content (Relation, Class non-specific, Class specific and Synonym) and in form (Phrase, Clause or Simple Sentence, Transitional form) during the first school years while in Junior and Senior High school their performance would be higher. On the contrary, this upward trend is not mentioned in bilingual student performances while they are in school. It is, also, predicted that monolingual educated adults and university students would provide Aristotelian or partially Aristotelian definitions in content and form. Results from the present investigation confirm this hypothesis for content and form categories. The Upper Elementary students seem to provide Functional/ Descriptive/ Example/ Association/ Effect/ Tautology (in content) and Phrase/Simple Clause definitions (in form) when asked to define words while Junior and Senior High school students use mainly the categories Combination I and Functional/ Descriptive/Example/ Association/ Effect/ Tautology definitions (in content) and Partial Aristotelian definitions (in form) when they define words. The most frequent category for University students is Combination I. This finding is in line with previous literature (Dourou 2019, 2020; Dourou, Gavriilidou & Markos 2020) and also reflects the stratification of our sample. Elementary school pupils and uneducated Adults mainly provided low-level categories in content and form, while University students and educated Adults provided high-level categories in their definitions. This result suggests interesting possibilities, allows for speculation and emphasizes the need to implement in elementary and secondary education for bilinguals explicit intervention programs integrated language teaching courses with dictionary use, in order to improve their vocabulary and to create opportunities in classroom for training them in formal definitions.

6.2 The total score of correct definitions in content and form by ML and BL sample.

The second hypothesis was to study the total score of correct definitions in content and form per age category for monolingual and bilingual sample. The hypothesis was confirmed consistently with the literature on the development of

definitional skills (Dourou, 2019; Dourou & Dosi 2021), since monolinguals outperformed bilinguals in both content and form. Specifically, in Senior High school, bilinguals seemed to catch up their monolingual peers in form. The elimination of difference in form may be due to metalinguistic abilities that bilingual students have developed, which conceivably assist them to produce better definitions (Snow et al., 1991; Lee, 2005; Kang, 2013). The lower scores in content were expected since in some cases bilinguals may cannot find the superordinate term or the more general category in order to use them (El Euch & De Koninck, 2006).

6.3. The effect of the semantic characteristics of words on definitions between ML and BL speakers (content and form)

The third hypothesis concerned the effect of semantic characteristics of words on definitions of monolingual and bilingual sample. The hypothesis that concrete nouns would be better defined compared to abstract nouns, both by monolingual and bilingual group, was fully confirmed. According to literature review (McGhee-Bidlack, 1991; De Groot, 1992; Johnson & Anglin, 1995; Sadoski, Kealy, Goetz & Paivio, 1997; Nippold et al., 1999; Dourou, 2019), the definitions of concrete nouns were more precise due to their superordinate and subordinate connections with other nouns. The hyperonyms of abstract nouns (e.g. “condition for the concept of longevity”,) are language skills, which have not yet been developed in Elementary school students. De Groot (1992) examined bilingual samples and found that concrete nouns may share more elements of their representations across languages than non concrete words. Others have argued that concreteness effects are due to richer semantic representations (which may involve a wider network of prior contextual knowledge) for concrete words (De Groot, 1989; Grondin, Lupker, & McRae, 2009; Schwanenflugel & Shoben, 1983).

6.4. The effect of the word structure on definitions between ML and BL speakers (content and form)

The fourth hypothesis was to investigate the effect of word structure (simple and compounds) on word definitions, in content and form, between monolingual and bilingual speakers. The findings of the present study comply with those reported in Dourou (2019) who found better performance of her sample in simple than in compound words. The results could be justified because the words in the present study belong to the basic vocabulary of the students and they have high frequency. There is no previous research investigated so far how morphological structure interacts with other variables during word definition productions and how this interaction affects the definitional ability chosen by monolingual and bilingual speakers.

6.5. The effect of grammatical category of words on definitions between ML and BL speakers (content and form)

The fifth hypothesis concerned grammatical categories. Hence, we hypothesized that monolinguals would outperform bilinguals in all grammatical categories, due to their vocabulary knowledge. Moreover, nouns would be better defined compared to adjectives and verbs. The hypothesis was partially confirmed. Monolinguals outperformed bilinguals, both in content and form. Thus, monolinguals produced more formal definitions in nouns and adjectives than in verbs, both in content and form. As stated in previous studies (Nippold et al., 1999; Snow, 1990; Dourou, 2019) in nouns were used more formal definitions compared to verbs and adjectives suggesting, as mentioned above, that the characters of nouns facilitate the use of superordinate categories. Concerning nouns, the seemed to develop faster in monolinguals, possibly due to vocabulary knowledge and organization.

On the contrary, the results have shown that adjectives were better defined than nouns and verbs by the bilingual group. This finding can be justified by the fact that the bilinguals in our sample had a smaller Greek vocabulary, so it is

possible that they were not able to generate as many words on the semantic tasks as the native monolinguals (Gollan et al., 2002, Rosselli et al., 2000).

6.5. The effect of gender, age, career orientation and education level on definitions between ML and BL speakers

The final aim of the paper was to investigate the effect of gender on the performance of the sample while providing definitions. A main effect of gender was found on the overall score of responses. It was predicted that females would outperform males. The data of this study confirmed this hypothesis; females had better performance than males in the definition ability, both in monolingual and bilingual group. One possible explanation of that finding is that definitional ability could be part of the larger construct of linguistic skills. In line with previous research (Huttenlocher, Haight, Bryk, Seltzer, & Lyons, 1991), females outnumber males in most language skills assessments and exhibit better verbal skills than males.

In addition, it was found a main effect of language and age (educational level), both in content and form, but also an interaction between two variables. More specifically, the results showed differences between monolinguals and bilinguals in Upper Elementary and Junior High school students. Monolingual outperformed bilinguals in both content and form and, also, in the monolingual group the improvement in definitions emerges in Junior High school while for the bilingual group it takes more time for the enhancement to manifest. The lower scores were expected since in some cases bilinguals may not know the hyperonym term or the more general category in order to use them (El Euch & De Koninck, 2006). Hernandez & Li (2007) attribute, also, the bilingual disadvantage to the delay in age of acquisition of the second language. In a similar vein, bilinguals, due to their lower vocabulary, did not know some nouns, which were more abstract or compound.

The results of the present study showed, also, differences between monolinguals and bilinguals in Humanities students. It was found that career orientation had a statistically significant effect on definitions, both in monolingual and bilingual sample. The hypothesis, that monolingual students in Humanities would outperform bilingual students in Humanities, was confirmed. This result may be accounted by the fact that monolingual students in Humanities have ground knowledge of syntax, a high linguistic competence and also practice with definitions during learning. One more finding of the present study is the difference between monolinguals and bilinguals in medical students, but only in the form of definitions.

The final aim of the study was to check the effect of educational level to the performance of Adults in the definition task. The present study has shown that the educational level has a significant effect on the content and form of the definitions between the monolingual and bilingual sample. It was predicted that monolingual Adults without university education would perform better than bilingual Adults without university education

Conclusion

This article endeavored to convey the importance of improving definitional skills and has presented some concrete methods for educators to facilitate young monolingual and bilingual student's development of definitional ability. Although typical development of definition is a gradual and slow process, the school-age years are a critical time period in the development of definition. An early foundation in definition may aid in the development of language skills and may help promote school success (Marinellie 2001). Various activities could be used to develop the basic vocabulary, through the use of picture cards and the use of dictionaries and concept maps (Dourou 2020). The above teaching methods could help educators in assessing and improving, the definitional abilities not only of monolingual students but also could be useful for students who have Greek as a second language aiming at their vocabulary enhancement and their academic achievement.

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