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AN EXPERIMENTAL APPROACH TO THE BASIC COLOUR TERMS I N MODERN GREEK: THE CASE OF blĭ, γalбzjo, γalany

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Abstract

According to Berlin & Kay's [5] theory, it is possible for a language to include more than 11 basic colour terms. It is remarkable that in certain languages more than one term denote «blue». Russian is a good example of a language having two basic terms for blue – sinij (dark blue) and goluboj (light blue). Similar examples of languages with two basic colour terms for blue are Turkish, Arabian, Italian and Chinese. In addition, Androulaki et al. [2] claim that Modern Greek has 12 basic colour terms, supporting that γalбzjo (light blue) should be included in these terms. The question arising is whether the term γalбzjo in Modern Greek could be considered as a basic colour term. This is the main issue in the present experimental research. For conducting the experiment the Munsell colour system was used. The results of the empirical research show that the term γalany is a lighter hue of blĭ (blue) in relation to γalбzjo. Moreover, these terms cannot be considered as basic, since, on the one hand, they are included in a basic colour category (blĭ), and, on the other hand, they occur only in particular collocations, violating the corresponding Berlin & Kay's (5, P. 6) criteria.

Key words: Berlin & Kay's experiment; basic colour terms; Modern Greek; blĭ, γalбzjo, γalany.

1. Introduction

During the last decades, of particular interest is the theory of Berlin & Kay [5], related to colour categorization. According to this theory, a language can have from 2 to 11 basic colour terms. These eleven basic categories are *white*, *black*, *red*, *green, yellow, blue, brown, purple, pink, orange* and *grey*. In addition, the authors [5, P. 2-3] argue that there are strict restrictions on basic colour categories in languages that include fewer than 11 basic colour categories: all languages have terms for *white* and *black*; if a language has a third term, then it contains a term for *red;* if it has four terms, then these are *green* or *yellow;* if it has five terms, these are both *green* and *yellow*; if a language has a sixth term, it is *blue*; if it has a seventh, then it is *brown*; if it has eight terms, then it is *purple*, *pink*, *orange*, *grey*, or a combination of these.

Besides, Berlin & Kay [5, P. 35-36] mention the possibility a language to have more than eleven basic colour terms. A typical example is Russian, which contains 12 basic colour categories, because of the distinction observed between "sinij" and "goluboj", e.g. between the dark *blue* and light *blue*, concerning lightness. [6; 13; 11; 8; 15; 16; 18]. Similar results regarding distinctions of blue appear also in languages related to Russian, such as Ukrainian and Belarusian. According to Safuanova & Korzh [18, c. 78], "sinij" is used in lexical collocations with words such as "sky", "snow", and also in others with a negative connotation ("heavy clouds", "haze", "harsh"), while "goluboj" is used with words that have a positive connotation ("affectionate", "soft", "tranquil", "serene"). In a similar way, Turkish has twelve basic colour terms, including "lacrivert" (dark *blue*) and "mavi" (light *blue*) [14]. It is noteworthy that in Nepali the term "Akashi" is used to indicate the sky light *blue* [8]. Moreover, in Arabic the following terms are used for denoting *blue*: "azrock" (*blue*), "samawee" (light *blue*) and "khuhlie" (dark *blue*) [1]. As far as Greek is concerned, the research of Androulaki et al. [2] is the only one supporting that it has 12 basic colour terms, including *γalбzjo* (light *blue*). Nevertheless, except *blŭ* ("blue") and *γalбzjo* (light blue), they recognize the presence of *γalany*, which they consider as identical with *γalбzjo*, without discerning any difference between these two terms [2, P. 6, 10). Research about the basic colour terms in Modern Greek has been also carried out by Serakioti & Markopoulos [19] and Serakioti [20].

The aim of the present research is the experimental examination of the following issues: a) if in Modern Greek there is any difference between the terms *blŭ, γalбzjo*, *γalany*, b) if the above colour terms can be characterised as basic, fulfilling Berlin & Kay's criteria [5, P. 6-7].

2. Methodology

In this study, the Munsell colour array, used also by Berlin & Kay [5], was given (Figure 1) to the subjects of the research, who were asked to find the typical version of *blŭ*, *γalбzjo* and *γalany*. More particularly, the second stage of data collection of Berlin & Kay's experiment was followed [5, P. 5]. The Munsell colour array contains a set of 330 colour chips, of which 320 represent 40 different hues, each divided into 8 different lightness levels (Munsell value). The purpose of this experiment is to check whether there is deviation in the perception of the three colour terms *blue*, *γalбzjo, γalany,* taking into account that Androulaki et al. [2, P. 6, 10] consider *γalбzjo* as identical to *γalany*.

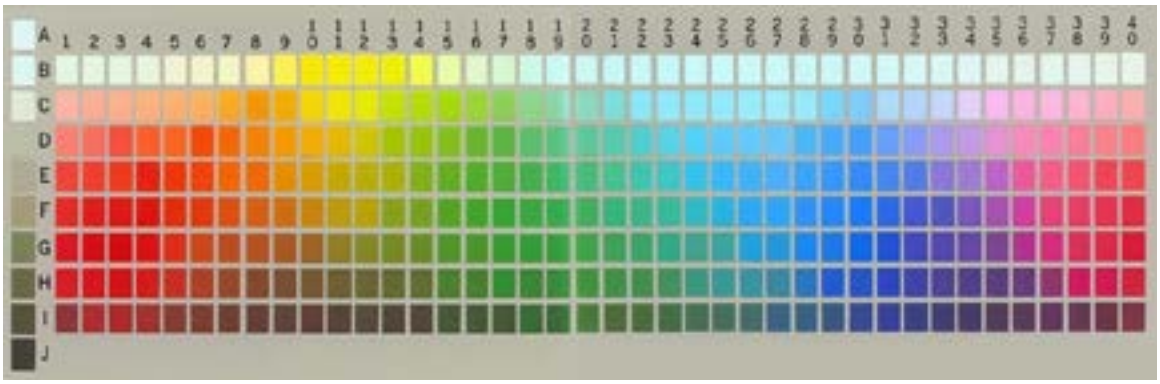

Figure 1. The Munsell colour array

It is worth noting that the survey participants were asked to mention their age and gender, and these data were later processed. To avoiding the effect of the order in which colours were presented, a different order of colours for each participant was followed.

For registering, grouping and statistically processing data, tables were created, which include the serial number of the speaker, the gender, the colour and the corresponding values for its placement on the vertical and the horizontal axis of the colour spectrum (see Appendix). To facilitate data processing and numerical calculations, for the vertical placement in the colour spectrum numbers were used instead of letters (A = 0, B = 1, C = 2, D = 3, E =4, F = 5, G = 6, H = 7, I = 8). Furthermore, on each axis the average and the standard deviation were calculated for denoting the median of each colour, in order to investigate whether all values are focused on a particular point or there is great dispersion around a central value. In addition, the confidence interval was calculated on the vertical and horizontal placement to indicate the maximum error probability (0.05). The outliers were removed, e.g. values exceeding x'+2×s, and the average and standard deviation were recalculated.

The survey involved a total of 60 Greek native speakers, 30 males and 30 females, aged 20-50 years, who had no achromatopsia or dyschromatopsia problems (see 10; 7, 21; 17].

3. Findings and Discussion

The results of the present research indicate that the terms *γalбzjo* and *γalany* do not correspond to identical values in the spectrum, while there is significant deviation between them and *blŭ*. More particularly, *γalбzjo* appears to be a darker hue of *blŭ* in relation to *γalany*, with average (26.7, 3.2), while *γalany* appears as a lighter hue of blue in relation to *γalбzjo*, with average (26.82, 2.79), as it can be seen in Figure 2. Thus, in the horizontal axis there is no difference between the two colour terms, contrary to the vertical axis. It seems that this difference regarding the colour lightness is not accidental, since the average of each point is outside the confidence interval of the other.

Moreover, it should be also mentioned that between these two adjectives (*γalбzjos-γalanys*) there are differences regarding the collocations and each of them refers to a particular class of objects. For example, *γalбzjos* is mainly used in collocations with words such as *θblasa* (sea), *lнmni* (lake), *aktн* (shore), while *γalanys* with words such as *uranys* (sky) and also *simŭa* (flag), indicating the blue and white colour of the Greek flag. Thus, it is expected for one to say e.g. *γalбzja θblasa/ lнmni/ akti*, instead of *γalanн θblasa/ lнmni/ aktн* or phrases, such as "*to γalбzjo tis θblasas/ tu uranъ*" (the blue of the sea/ sky) instead of "*to γalany tis θblasas/ tu uranъ*". From the SEK (Corpus of Greek Texts) (Goutsos 2013) this difference is confirmed, since the term *γalбzjos* is used in plenty of collocations, much more than *γalanys*. These are some examples: *"to γalбzjo tu pelбgus"* (the blue of the sea), *"to aperado γalбzjo tou Egŭu"* (the endless blue of the Aegean Sea), *"to γalбzjo tis θblasas ke tu uranъ"* (the blue of the sea and the sky), *"γalбzjo akrojбli"* (blue shore), *"γalбzja lнmni"* (blue lake), and also metonymically "*to nisн pu zy нne γalбzjo*" (the island in which I live is blue), instead of "*to nisн pu zy ŭxi γalбzja θblasa*" (the island in which I live has blue sea). The term *γalanys* appears, mainly, in literacy in collocations such as *"γalanys uranys"* (blue sky), *"γalanб nerб"* (blue water), *"γalanб mбtza"* (blue eyes) and also metonymically, e.g. *"to γalany tis vlŭma"* (her blue look).

		Blŭ	***γalбzjo***	***γalany***
average	x	30,49	26,7	26,82
	y	5,87	3,2	2,79
confidence	x	0,19	0,53	0,57
	y	0,22	0,26	0,26
Standard deviation	x	0,72	2,03	2,21
	y	0,82	0,98	1
Number of subjects		55	56	57

Figure 2. Average of blŭ, γalбzjo, γalany in Modern Greek

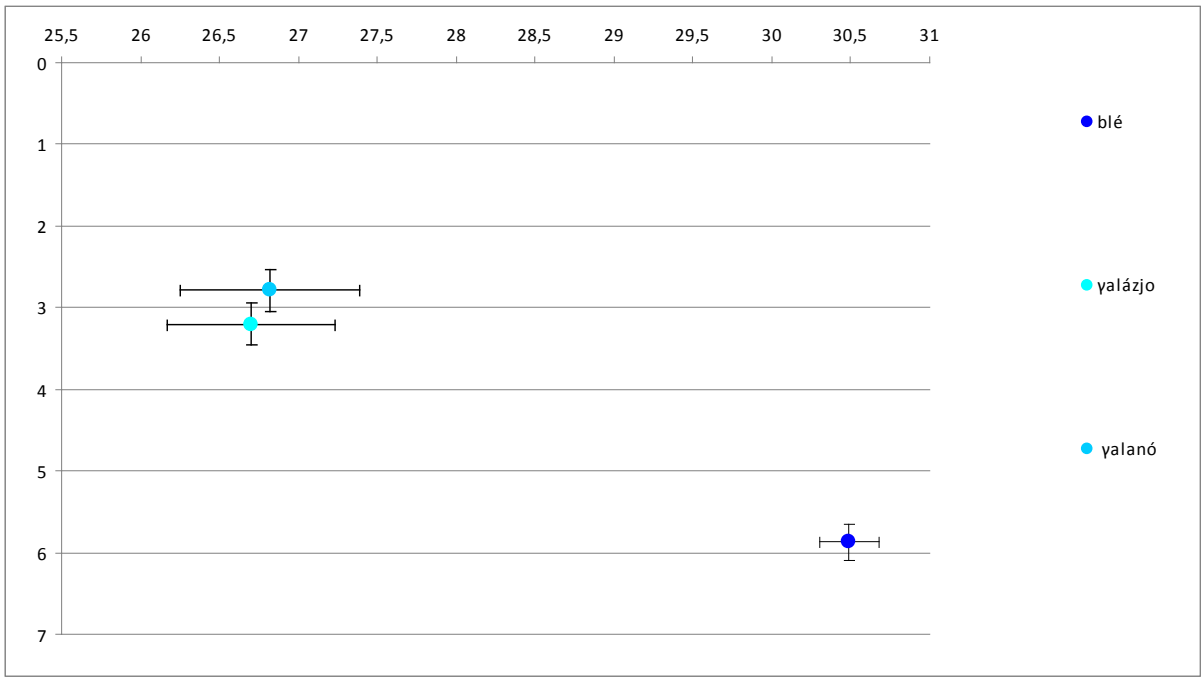

Figure 3. Graphic depiction of the value of blŭ, γalбzjo, γalany in Modern Greek

Moreover, there is a difference between *γalбzjos* and *γalanys* regarding their compounds and derivatives. Thus, in compounding with the prefix *kata-* the term *kataγбlanos* (very blue) is used instead of **kataγбlazos*. According to SEK, the derived word *kataγбlanos* appears in collocations such as "*kataγбlanos uranys*", "*kataγбlani θбlasa*", "*kataγбlana mбtза*", excluding the use of **kataγбlazos* ("**kataγбlazos uranys*", "**kataγбlazi θбlasa*", "**kataγбlaza mбtза*". Regarding the derivation of these colour terms with the suffix *–opys* (-ish), *γalazopys* is used instead of **γalanopys*.

Furthermore, in compounding the terms *γalazoprбsino* (blue-green) (*γalбzjo* + *prбsino*) and *prasinoγбlazo* (*prбsino* + *γalбzjo*) are preferred and not **γalanoprбsino* (*γalany* + *prбsino*) and **prasinogбlano* (*prбsino* + *γalany*). Also, the term *γalanylefkos* (blue and white) (*γalany* + *lefky*) is used, but not the term **γalazoleukos* (*γalбzjo* + *lefky*).

In the research of Androulaki et al. [2] *γalбzjo* is presented as "lighter blue" and considered as a basic colour term of Greek, on the basis of the frequency of its appearance, while it is also claimed that the term *γalбzjos* is identical with the term *γalanys* [2 P. 6, 10-11]. Thus, the term *γalбzjos* and *γalanys* are both considered as light blue, without any differentiation between them. Moreover, it is argued that there is no difference regarding the collocations of the two terms, since they are both used to denote the colour of the sea, sky and the greek flag, and also the blue colour of the eyes [2, P. 6].

Regarding the methodology of their research, there is considerable inconsistency in the used sample, since the number of the subjects varies in each stage of the experiment (In different stages of the research the subjects were 8 bilingual speakers of Greek and English (6 females and 2 males), 6 Greek speakers from Crete (3 males and 3 females) speaking a particular Greek dialect of Crete, 18 Greek native speakers (10 males and 8 females) and 12 Greek native speakers (7 females and 5 males)), as well as the ratio of the representatives of the two genders (male – female), while only a limited range of ages is covered (19 to 31 years old). Additionally, the selection of the subjects from Crete, who speak a particular dialect of Greek, is rather debatable (as Androulaki et al. [2, c. 18] mention, the six subjects of the research were born and lived in an isolated village of Crete with about 150 inhabitants).

Concerning the presented experiment, we notice a difference between *γalбzjo* and *γalany*

regarding the hue. Thus, we can consider the two terms as a variation of *blŭ*, given the fact that *ɣalany* corresponds to a lighter hue of blй in relation to *ɣalбzjo*, and *ɣalбzjo* to a darker hue of *blŭ* in relation to *ɣalany* (Figure 4).

Figure 4. Semantic relationships of Greek ble, ɣalбzjo, ɣalany
(the scheme is identical with that of Berlin & Kay [5, c. 36] for the Russian siniy and goluboy)

For the question if *ɣalбzjo* and *ɣalany* are basic colour terms, it would be useful to examine Berlin & Kay's [5, P. 6-7] criteria for the characterisation of a colour term as basic. A colour term is considered as basic when: a) its meaning does not derive from the meaning of its parts (e.g. “blue” and not “bluish”, “olive green”), b) it is not included in another colour category (e.g. “scarlet” is included in “red” and is a kind of it), c) it is not limited to a category of objects (e.g. “blond” is mainly used with “hair”, “complexion” and “furniture”), and d) it is widely known and accepted by all the speakers (e.g. “yellow” instead of “saffron”).

Based on the above criteria, the terms *ɣalбzjo* and *ɣalany* cannot be considered as basic colour terms in Modern Greek, since they violate the criteria (b) and (c). On the one hand they violate the criterion (b), since they are included in the basic colour category of *blŭ* and are a subcategory of it, and on the other hand they violate the criterion (c), since each of them appears only in particular collocations.

4. Conclusion

According to the present experimental research, the term *ɣalбzjo* is a darker hue of *blŭ* in relation to *ɣalany*, while *ɣalany* is a lighter *blŭ* than *ɣalбzjo*, since there is a deviation of values regarding their lightness on the vertical axis. Moreover, these terms cannot be considered as basic colour terms, since, on the one hand, they are included in a basic colour category being a subcategory of it and, on the other hand, they occur only in particular collocations, violating the corresponding Berlin & Kay's [5] criteria. Nevertheless, this issue needs further investigation and interdisciplinary approach.

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APPENDIX. The data for *blŭ, yalɓzjo, yalany* in Modern Greek

Serial Number of Speaker	Gender	Colour	Vertical axis	Horizontal axis
1f	female	yalɓzjo	6	26
2f	female	yalɓzjo	3	27
3f	female	yalɓzjo	3	27
4f	female	yalɓzjo	4	24
5f	female	yalɓzjo	3	25
6f	female	yalɓzjo	5	29
7f	female	yalɓzjo	3	26
8f	female	yalɓzjo	2	30
9f	female	yalɓzjo	3	27
10f	female	yalɓzjo	3	27
11f	female	yalɓzjo	3	26
12f	female	yalɓzjo	3	28
13f	female	yalɓzjo	2	27
14f	female	yalɓzjo	6	27
15f	female	yalɓzjo	2	29
16f	female	yalɓzjo	3	25
17f	female	yalɓzjo	2	22
18f	female	yalɓzjo	2	25
19f	female	yalɓzjo	2	27
20f	female	yalɓzjo	3	27
21f	female	yalɓzjo	5	28
22f	female	yalɓzjo	4	27
23f	female	yalɓzjo	3	22
24f	female	yalɓzjo	2	21
25f	female	yalɓzjo	2	30
26f	female	yalɓzjo	3	28
27f	female	yalɓzjo	2	29
28f	female	yalɓzjo	5	27
29f	female	yalɓzjo	4	28
30f	female	yalɓzjo	3	27
1m	male	yalɓzjo	3	25
2m	male	yalɓzjo	2	29
3m	male	yalɓzjo	2	25
4m	male	yalɓzjo	5	29
5m	male	yalɓzjo	2	23
6m	male	yalɓzjo	4	28
7m	male	yalɓzjo	2	23
8m	male	yalɓzjo	3	27
9m	male	yalɓzjo	4	25
10m	male	yalɓzjo	4	27
11m	male	yalɓzjo	5	24
12m	male	yalɓzjo	4	24
13m	male	yalɓzjo	2	29
14m	male	yalɓzjo	3	30
15m	male	yalɓzjo	4	27
16m	male	yalɓzjo	3	29
17m	male	yalɓzjo	3	28
18m	male	yalɓzjo	5	27
19m	male	yalɓzjo	3	28
20m	male	yalɓzjo	2	24
21m	male	yalɓzjo	4	27
22m	male	yalɓzjo	4	24
23m	male	yalɓzjo	3	25
24m	male	yalɓzjo	2	29
25m	male	yalɓzjo	4	36
26m	male	yalɓzjo	5	27
27m	male	yalɓzjo	3	29
28m	male	yalɓzjo	4	27
29m	male	yalɓzjo	3	25
30m	male	yalɓzjo	4	27

Serial Number of Speaker	Gender	Colour	Vertical axis	Horizontal axis
1f	female	yalany	2	26
2f	female	yalany	2	28
3f	female	yalany	2	24
4f	female	yalany	2	23
5f	female	yalany	3	24
6f	female	yalany	4	25
7f	female	yalany	2	31
8f	female	yalany	2	24
9f	female	yalany	3	27
10f	female	yalany	2	30
11f	female	yalany	3	28
12f	female	yalany	2	28
13f	female	yalany	2	30
14f	female	yalany	3	27
15f	female	yalany	3	28
16f	female	yalany	3	25
17f	female	yalany	1	26
18f	female	yalany	2	28
19f	female	yalany	1	28
20f	female	yalany	3	27
21f	female	yalany	5	26
22f	female	yalany	3	27
23f	female	yalany	4	32
24f	female	yalany	2	23
25f	female	yalany	2	21
26f	female	yalany	2	29
27f	female	yalany	3	27
28f	female	yalany	3	28
29f	female	yalany	2	30
30f	female	yalany	2	23
1m	male	yalany	2	27
2m	male	yalany	2	28
3m	male	yalany	2	29
4m	male	yalany	3	29
5m	male	yalany	2	23
6m	male	yalany	4	25
7m	male	yalany	7	31
8m	male	yalany	2	27
9m	male	yalany	4	25
10m	male	yalany	2	27
11m	male	yalany	5	23
12m	male	yalany	4	30
13m	male	yalany	3	26
14m	male	yalany	5	26
15m	male	yalany	2	27
16m	male	yalany	3	29
17m	male	yalany	2	29
18m	male	yalany	5	27
19m	male	yalany	4	29
20m	male	Γalany	4	24
21m	male	yalany	3	23
22m	male	yalany	4	30
23m	male	yalany	3	25
24m	male	yalany	2	29
25m	male	yalany	4	30
26m	male	yalany	4	25
27m	male	yalany	3	26
28m	male	yalany	2	25
29m	male	yalany	3	29
30m	male	yalany	2	27

Serial Number of Speaker	Gender	Colour	Vertical axis	Horizontal axis
1f	female	blĭ	6	31
2f	female	blĭ	6	31
3f	female	blĭ	6	31
4f	female	blĭ	6	30
5f	female	blĭ	5	30
6f	female	blĭ	7	31
7f	female	blĭ	6	31
8f	female	blĭ	7	31
9f	female	blĭ	6	30
10f	female	blĭ	7	31
11f	female	blĭ	6	31
12f	female	blĭ	6	31
13f	female	blĭ	7	31
14f	female	blĭ	7	31
15f	female	blĭ	7	30
16f	female	blĭ	4	31
17f	female	blĭ	6	30
18f	female	blĭ	3	30
19f	female	blĭ	8	27
20f	female	blĭ	4	29
21f	female	blĭ	7	31
22f	female	blĭ	4	30
23f	female	blĭ	6	31
24f	female	blĭ	6	30
25f	female	blĭ	5	30
26f	female	blĭ	6	31
27f	female	blĭ	6	28
28f	female	blĭ	5	31
29f	female	blĭ	6	31
30f	female	blĭ	6	30
1m	male	blĭ	5	29
2m	male	blĭ	4	28
3m	male	blĭ	8	30
4m	male	blĭ	4	29
5m	male	blĭ	7	31
6m	male	blĭ	6	31
7m	male	blĭ	6	31
8m	male	blĭ	5	31
9m	male	blĭ	6	30
10m	male	blĭ	6	31
11m	male	blĭ	6	31
12m	male	blĭ	6	31
13m	male	blĭ	7	29
14m	male	blĭ	6	30
15m	male	blĭ	6	31
16m	male	blĭ	6	30
17m	male	blĭ	6	31
18m	male	blĭ	6	30
19m	male	blĭ	5	32
20m	male	blĭ	6	30
21m	male	blĭ	5	30
22m	male	blĭ	5	30
23m	male	blĭ	6	30
24m	male	blĭ	7	29
25m	male	blĭ	6	31
26m	male	blĭ	6	30
27m	male	blĭ	5	32
28m	male	blĭ	5	30
29m	male	blĭ	7	31
30m	male	blĭ	6	30