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COGNITIVE MAPS OF EUROPE: GEOGRAPHICAL KNOWLEDGE OF TURKISH GEOGRAPHY STUDENTS

AUTHORS

Ilkay SUDAS
Ege University, Faculty of Letters, Department of Geography, 35100 Bornova, Izmir, TURKEY
ilkay.sudas@ege.edu.tr, http://cografya.ege.edu.tr/

Cemil GOKTEN
Macquarie University, Department of Human Geography Development Studies and Cultural Change Programme Sydney, AUSTRALIA
http://www.humgeog.mq.edu.au/

Abstract
This paper aims at determining the level of basic geographical knowledge and perspectives of Turkish geography students about Europe, through cognitive maps. Research was conducted on a sample of 72 geography undergraduate students from the first and the fourth levels in order to reflect the effect of geographical education on mapping and their level of knowledge of Europe. Results indicate that Turkey's appearance on the cognitive maps is important as it provides us with clues about participants' thoughts about Turkey's belonging to Europe and geographical education. For some participants the idea of Europe is formed only within the physical borders and for other participants the idea is linked relatively to economic development and the political context.

Keywords: *Europe, higher education, geography, cognitive map, spatial representation*

1. INTRODUCTION

Many disciplines ranging from geography to sociology, from architecture to psychology, from natural sources management to regional planning have been involved in research aimed at understanding human behaviour in relation to the physical environment (Francescato and Mebane 1973: 131). The way people react to different environments greatly depends on their perceptions of those environments and the relation with the environment depends on each person's mental images and representations (Cassidy 1997). These images can be related to a vast scale like the whole world, a continent, a region, a town or even a section of a town. When this image is being formed, the reality related to the physical environment and the person's perception which is in turn influenced by the environmental and psychological factors play a role. Understanding the subjective environment which is formed by these images is as important as understanding the physical environment. Hence the different

individuals' and cultures' perception of the environment becomes a significant research field and the difference between the reality of the physical world and the persons' perception of it forms the main field of interest of behavioural geography as a sub-discipline in geography. This difference is closely related to the persons' acculturation process (Tümertekin and Özgüç 2009) and as Lynch (1973:307) points out; different groups may have widely different images of the same outer reality.

Cognitive maps are the main tools that are used to identify spatial images and the difference between physical and subjective environments (Milgram 1972). Cognitive mapping is a process by which individuals acquire, store and recall information about the places in the environments with which they come into contact (Gold 2009:287). The earliest use of term cognitive map is credited to Tolman (1948) but the start of the field can be traced to "Image of the City" by Lynch (1960). The first introductory volume which outlined the scope and approaches was "Image and Environment" by Downs and Stea (1973) and others such as Gould and White (1974) and Downs and Stea (1977).

A cognitive map usually does not have the graphical features of a geographical map and does not reflect the objective environment precisely. Milgram (1972) and Lynch (1960) describe *cognitive maps* as "*the inner images that are developed by the individual about a place*". Downs and Stea (1977) define cognitive maps as an abstraction covering those cognitive or mental abilities that enable us to collect, organize, store, recall and manipulate information about the spatial environment. Tuan (1975) refers to a term *mental map* and describes it as *a special type of image which is even less directly related to sensory experience and states that mental maps, like real maps, are a means to structure and store knowledge. The mental map is like the real map, a way to organize data.* On the other hand, another concept, *mind mapping*, is also used in a different sense which is more depends on organizing information through categories and hierarchies, suggested by Buzan and Buzan (1993).

Gold (2009:288) emphasizes on the different scales in cognitive map researches. Research undertaken on the perception of the environment through cognitive maps may be done at different scales such as on *cities* (*i.e.* Lynch 1960, Johnston 1972), *continents* (Andersen and Maude 1994) or the *world* (Saarinen 1988). For example, Saarinen (1988) worked on the centring of the world mental maps; Saarinen and Mac Cabe (1995) researched the abilities of the first year university students about drawing a world map, Andersen and Maude (1994) and Andersen again in 1997 worked on the continent of Asia; Berkowits, Saarinen and Mac Cabe (1992) researched Africa. World cognitive maps were also examined with samples from different countries as well: For example, Kong *et. al.* (1994) worked with samples from Singapore; Saarinen *et. al.* (1991) from South Korea; and Saarinen and Mac Cabe (1989) worked with samples from Finland.

Although cognitive maps received world-wide importance and attention from the 1960's on, the earliest work including cognitive maps developed in Turkey was in the late 70s. As Tunçel stated (2002:89) as the first example in Turkish, Tümertekin (1978) referred to the conceptual aspect of it and the first extensive introduction attempt was made by Tolun in 1980. Even though, during the following years no empirical study based on cognitive maps appeared in Turkey. However Tümertekin and Özgüç (1998, 2002, 2004 and 2009) emphasized the theoretical frame of this subject in their textbook on human geography. The very first example of using cognitive mapping techniques was Tunçel's work in 2002 where the perception of Islamic countries by the university students was researched. In addition to this, Aliağaoğlu's and again Tunçel's works could be counted as other contributions for the Turkish literature on the subject. Aliağaoğlu (2007) researched the image of the city of Balıkesir among the university students and Tunçel (2009) researched the perception of a major street of the downtown Elazığ among different groups in the city (tradesmen, house-wives, government officials, teachers, university students etc.). Other disciplines, like social

psychology (Göregenli 2010, Karakuş and Göregenli 2008), also use cognitive maps as a part of their work which adds to the Turkish literature on the subject. Göregenli (2010:52), for instance, reveals that in images of cities, people give more importance to the functions rather than the architectural characteristics of the urban environmental elements: People have better images of the urban spaces which they use more frequently.

This research uses cognitive mapping at a continental scale. The image of Europe is examined through cognitive maps of Turkish geography students. "Europe" can be defined in various ways. Paasi (2001) for example, suggests that Europe is understood as an *experience*, a *structural body* and an *institution.* Murphy *et. al*. (2009) describes Europe both as a physical entity and a human entity – a cultural region. Mentz (2010), on the other hand, states that it can be defined according to its physical borders, in other words, as a *continent*, as an *idea* or as a *political entity* which means the European Union. He emphasises also the importance of considering the role of geography and the related components of "European competences" and geography is one of the relevant factors for the establishment of a European competence. *Every student in geography should have basic knowledge about the most important geographical aspects of Europe. This means that they should possess a topographic competence about Europe, competences to interpret landscapes and aspects of physical geography which are specific for European regions. They should, moreover, have a basic understanding of European economic geography, of demography…; in short: they should be able to interpret facts concerning Europe in all geographical themes (Mentz 2010:65).*

Depending on the finding of a research undertaken in Turkey by Tunçel (2002) who concludes that university students in Turkey draw "Europe-centred world maps", we ask "*How is this Europe located in the centre?*" and considering Mentz's opinions, this research aims at determining the level of basic geographical knowledge of Turkish geography students and their image of Europe through their cognitive maps. *The Common Framework for Europe Competence* indicates that "basic knowledge of the topography in Europe" is the first stepping stone to achieve a "European competence" (Maslowski *et.al.* 2009:18) and such a competence can be provided principally by geography teachers. Therefore, it is important to understand what Europe is in the mind of geography students as future teachers. Considering most of the geography graduates are employed as geography teachers in secondary schools in Turkey, it can be asserted that, they will teach about Europe to the next generations of Turkish society thus it is of great importance to understand their "Europe".

2. AIM AND METHODOLOGY

Europe in this research is accepted as the whole continent and the topographic features and the image of Europe is explored through cognitive maps drawn by the first and fourth grade geography students. This study aims at contributing to the understanding the image of Europe in geographical higher education and competencies of the students in Turkey. By this way, it can be possible to understand the current situation and develop a better curriculum on how to teach Europe to the Turkish geography students in higher education. In order to determine the possible changes about Europe during the undergraduate years, the sample are chosen among the students at first and fourth grades.

The sample group consists of 72 registered students of Ege University Geography Department. 40 of the first year and 32 of the fourth year students have participated in the research. A blank A3 sized paper sheet was given to the each student and the participants were asked to draw a map of Europe.

They were asked to draw a *star* on the point where they started drawing the map in order to mark the reference point which makes us understand their orientation. The theory of cognitive maps developed by Lynch (1960) from the environmental psychology perspective

comes from the idea that urban space can be ‘‘read.’’ That is, there is a list of recognizable symbols that determines whether a city is more or less legible. For Lynch, the main function of this legibility is *orientation*. Orientation can be determined through the reference point of a cognitive map which means the point that the participant starts to draw the map. The example in the scale of a city is adapted to a continental scale in this article and in order to understand how Europe is seen from Turkey, *reference point* of the maps is accepted as a variable.

Place names that the participants wrote on their maps (countries, cities, regions) and the geographic elements (islands, mountains, seas etc.) were counted and classified. The data were transferred into tables using SPSS.

The year that the participants were studying was taken as the *independent variable* and their correlations with other variables were researched. The purpose of this was to compare the geographical knowledge levels of year 1 and year 4 students about Europe. Geography students form a specific group compared to an ordinary sample when it comes to drawing a map because of their education. Either cartographic abilities or the number and variety of the components that could be shown on the map are expected to be high in this sample. Another expectation is the increased usage of *graphic style* when drawing cognitive maps from the fourth year students. As Eden (2004) suggest, a cognitive map has several structural properties: the property of hierarchy and the more general property of linkage. Each of these provides opportunities for analysis of structure and the *shape* of a cognitive map is one of the properties to be considered in analyzing cognitive maps. Göregenli (2010) suggests different shapes of cognitive maps according to drawing style and such as bloc, graphical, symbolic, serial and dot maps. The validity and reliability of these drawing styles were confirmed by studies (Göregenli 1985, Karakuş and Göregenli 2008) conducted in university student and adult samples in Izmir, Turkey.

Maps were examined by looking at the *reference point of the map*, drawing *style*, *type of components*, among these types the *ratio of neutral-geographical components* and the *distribution of European countries that were included on the maps* and *if Turkey was included* within the map or not. *Neutral-geographical components* mean all the place names and geographical units that can be found on a real map and exclude the ideological or symbolic elements or drawings reflecting participant’s subjectivity.

3. RESULTS

Throughout the sample, the reference points of the maps are concentrated mainly on three regions. These regions are; the Iberian Peninsula, the Scandinavian Peninsula and Turkey (Table 1). Approximately 20% of the participants picked the **Iberian Peninsula** as the starting point, 36% started from the **Scandinavian Peninsula** and approximately 38% started mostly from **Istanbul** and surroundings, or somewhere else in Turkey. Choosing the Iberian Peninsula as the starting point is 23.6% among the first year students while the ratio decreases to less than 15% with the fourth year students. A similar decline also applies for the Scandinavian Peninsula. Turkey’s ratio as the starting point for the map increases with the fourth year participants compared to the first graders. The ratio of Turkey used as the reference point is below the average (32.3%) with first year participants and above the average (44.4%) with the fourth year students. Other two reference points which both used were Italy and Great Britain.

Table 1: Reference points of the cognitive maps

Grade	Iberian Peninsula	Scandinavian Peninsula	Turkey	Other	Total
First	8	13	11	2	34
%	23.6	38.3	32.3	5.8	100.0
Forth	4	9	12	2	27
%	14.9	33.3	44.4	7.4	100.0
Total	*12*	*22*	*23*	*4*	*61*
%	*19.7*	*36.0*	*37.8*	*6.5*	*100.0*

When the drawing style is examined, it was seen that *graphic style maps* has the highest proportion (Table 2). Nearly 60% of the students drew graphic style maps which are followed by graphic-symbolic maps with a ratio of 17%. Symbolic style and graphic-dot styled maps have closer ratios; respectively 12.5% and 11.1%. Drawing style displays a relevant differentiation (p=0,007). Half of the first year students drew with graphic style the ratio exceeds 70% and with the fourth year students the symbolic style drawings ratio drops significantly.

Table 2: Drawing style of the cognitive maps

	1st Grade		*4th Grade*		*Total*	
Style	*Fr.*	*%*	*Fr.*	*%*	*Fr.*	*%*
Graphic	20	50.0	23	71.9	43	59.7
Symbolic	8	20.0	1	3.1	9	12.5
Graphic-Symbolic	10	25.0	2	6.3	12	16.7
Graphic-dot	2	5.0	6	18.8	8	11.1
Total	40	100	32	100	72	100.0

64% of the sample group used only neutral geographical components, 30% used both neutral geographical and ideological-symbolical components with their maps (Figure 1 and Figure 2). The ratio of maps where only ideological-symbolical components were used is only 7%. The components used in the maps display a significant differentiation depending on the years of education of the participant (p=0,032). As the maps in which only ideological-symbolical components were used disappear with the fourth year participants, the neutral geographical component ratio increases (Figure 3).

Figure 1. "Europe" of a 1st grade student: Excluding symbolic components, in graphic style and including Turkey completely with its name.

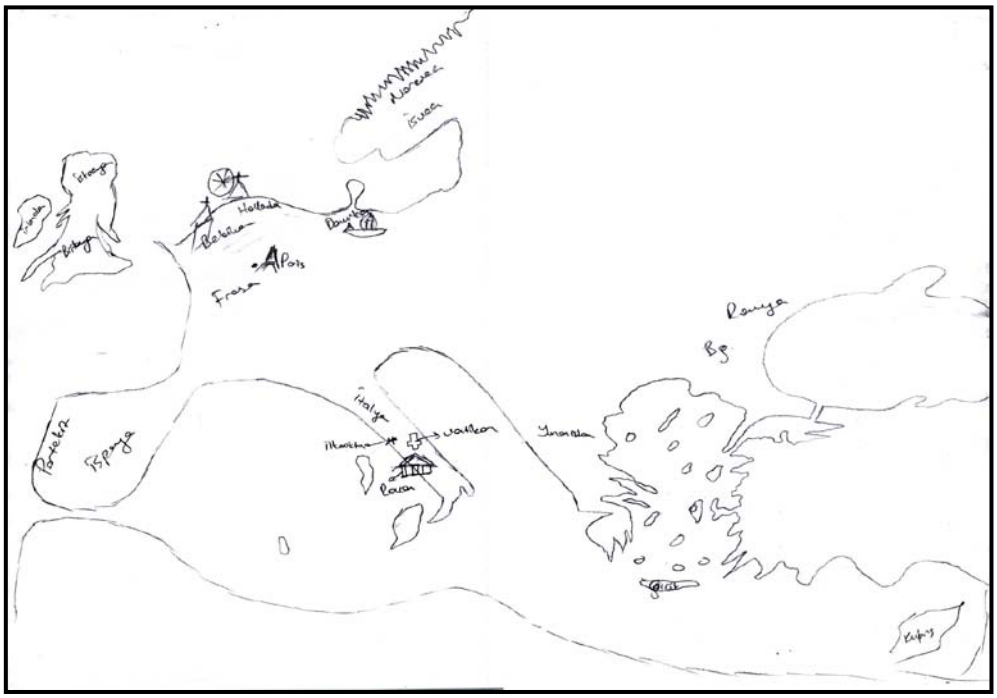

Figure 2. "Europe" of a 4th grade student: Including both geographical and symbolic components, in graphic style. Turkey is represented with the western part of the Anatolian Peninsula but name is not specified.

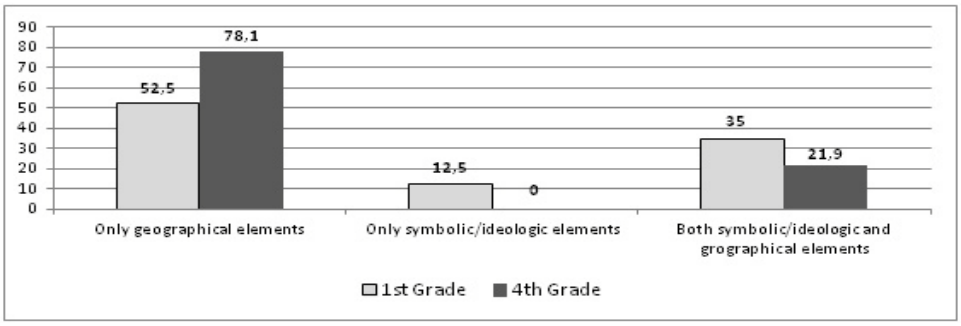

Figure 3. Types of elements on the cognitive maps

Neutral geographical components are shown in Table 3. These components which show an increase with the fourth year students include physical geographical items and their names such as mountains, islands and seas. In other words these components expose the students' conceptualization of the European continent. They can also be identified as non-symbolic components.

Table 3. Names of the geographical elements specified on the cognitive maps (Frequencies)

	Number of geographical elements			
	None	**1–10**	**11–20**	**21 +**	**TOTAL**
Frequencies in the 1st grade	*12*	*15*	*8*	*5*	*40*
%	30,0%	37,5%	20,0%	12,5%	100,0%
Frequencies in the 4th grade	*2*	*16*	*12*	*2*	*32*
%	6,3%	50,0%	37,5%	6,3%	100,0%
Frequencies in the total sample	*14*	*31*	*20*	*7*	*72*
% in the total sample	19,4%	43,1%	27,8%	9,7%	100,0%

Countries											
U.K.	40	Bulgaria	22	Hungary	13	Macedonia	6	Malta	3	Slovakia	2
Italy	39	Portugal	22	Sweden	12	Poland	6	Vatican	3	Albania	1
Greece	37	Holland	18	Denmark	11	Romania	6	Estonia	2	NCTR	1
France	33	Russian Fed.	18	Belgium	10	Bosnia-Herzegovina	5	Montenegro	2	Kosovo	1
Spain	32	Switzerland	16	Ireland	8	Belarus	4	Leetonia	2	Luxembourg	1
Germany	31	Austria	14	Ukraine	8	Czech Republic	4	Lithuania	2	Armenia	1
Turkey	27	Norway	14	Finland	7	Iceland	3	Serbia	2	Georgia	1
										Total	**490**

Cities											
Istanbul	4	Amsterdam	1	Bern	1	Helsinki	1	Madrid	1	New Castle	1	Vienna	1
Paris	3	Ankara	1	Brussels	1	Kiev	1	Milano	1	Sofia	1		
Rome	3	Athens	1	Bursa	1	London	1	Minsk	1	Stockholm	1	**Total**	**33**
Lisbon	2	Berlin	1	Bucharest	1	Luxembourg	1	Moscow	1	Tiran	1		

Physical Geographical Elements (Names specified)						**Other geographical elements**	
Black Sea	13	Aegean Sea	3	Plain of Po	1	European Union	13
Mediterranean Sea	9	Marmara Sea	3	Rhodes Island	1	Scandinavia	9
Cyprus Island	6	Alps	2	Uludağ	1	Balkans	3
Sicily Island	5	Crete Island	2	Monte Blanc	1	Czechoslovakia	2
Adriatic Sea	3	Greenland	2	Canary Islands	1	Eastern Europe	1
Baltic Sea	3	Strait of Gibraltar	1	**Total**	**56**	Yugoslavia	1
						Total	**29**

When the overall sample is analyzed, the average neutral geographic component count is 8.4. This value declines to 7.8 with first year students and on the contrary increases to 9.2 with the fourth graders. This difference is also statistically relevant (p=0,037). When 20% of the participants did not specify any neutral geographical component, the percentage of the participants which could show at most 10 components is above 40%. The percentages drop to 28% with the participants who could show between 11 and 20 neutral geographical units and less than 10% with the participants who showed 21 or more (Table 3).

As can be seen on **Figure 4**, Greece, Italy and Great Britain are in the first group as their names were mentioned the most, within the group which follows the first one comes Spain, France and Germany. The Balkan countries except Greece and Bulgaria, and eastern European country names were shown less. When Turkey's name is mentioned in nearly 38% of the sample, countries like Croatia, Moldavia and Cyprus were not shown at all. Some countries (Albania, TRNC *(Turkish Republic of Northern Cyprus -a de facto state located in the northern portion of the island of Cyprus and recognized by Turkey)*, Kosovo, Luxemburg, Armenia and Georgia) are only mentioned once and some small countries of Europe like Andorra and Lichtenstein were not shown on the maps. The only exception is Vatican as it represents a religious centre and was shown on the drawings (3 times). Another remarkable point is that Czechoslovakia which maintained its political entity until 1993 was mentioned twice and another country which lost its political entity in 2003; Yugoslavia was mentioned once.

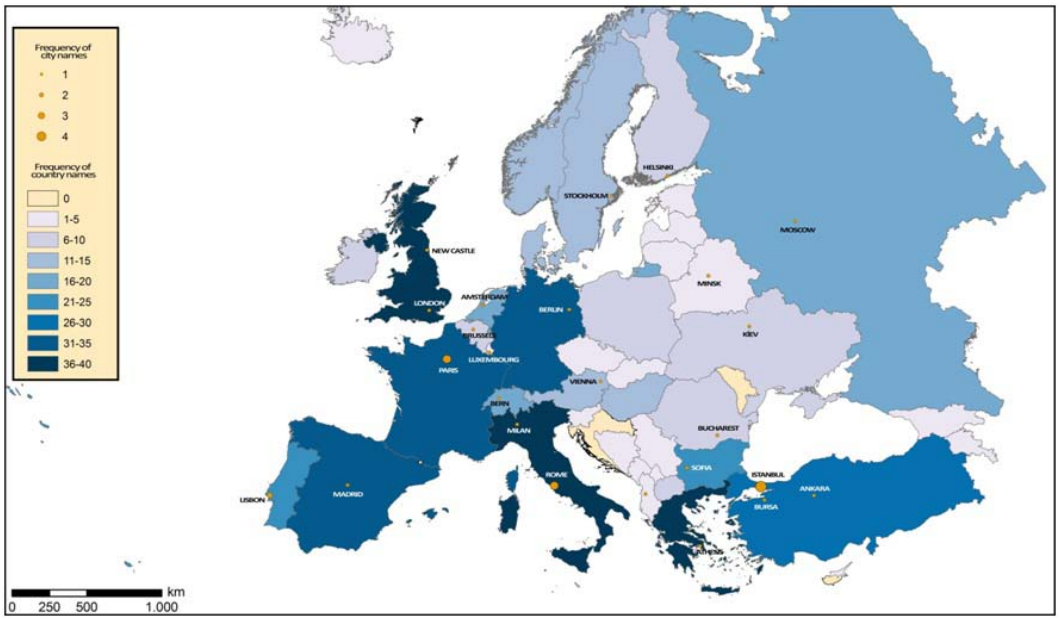

Figure 4. Distribution of country and city names written on the cognitive maps.

The cities on the European continent were nearly not mentioned except for one participant showing multiple capital cities. Even though with limited numbers, some cities that were shown on the map were: Istanbul (4 times), Paris (3 times), Rome (3 times) and Lisbon (twice). Apart from these New Castle in Great Britain and Bursa in Turkey were shown once.

Besides place names, the numbers that show physical geographic components (units) which form the neutral geographical units are 56 (considering that 72 maps were examined, 0.7 geographical components were used per participant). The physical geographic units whose names were mentioned the most are *seas* (34 times) and *islands* (17 times), and *The Alps* were only shown twice even though it is one of the most distinctive features of the physical structure of Europe. Although it was expected to be shown on the maps because of its

importance providing physical borders, the Ural mountain range for instance, was not shown on the maps. Neither were any rivers or lakes mentioned on the maps.

Other names that could be counted as "geographical components" were shown on the maps: The *European Union* which represents Europe as a political, economical system was shown 13 times. Regional names like *Eastern Europe, the Balkans* and *Scandinavia* were mentioned on the maps, again 13 times.

As stated above 38% of the students indicated Turkey's name, however the drawings differ from each other. Even though Turkey was included within the maps, it was shown in varied ways (Table 4). More than one fourth of the participants showed Turkey as a whole, and half of the participants showed it partially. Therefore, the way Turkey was drawn and how much of it was shown are important. According to our research, half of the students showed Turkey partially; these drawings showed Turkey with only Thrace and/or with the western part of the Anatolian Peninsula. 26.4% of the participants showed Turkey as a whole and another 23.6% of the participants didn't give Turkey a spot in their maps. When compared with the first year students, the maps that are showing Turkey as a whole displayed a nearly nine point increase with fourth year participants.

Table 4. Was Turkey drawn on the cognitive maps?

	1st Grade		*4th Grade*		*Total*	
	Fr	%	Fr	%	Fr	%
Turkey was not drawn	**10**	**25,0**	**7**	**21,9**	**17**	**23.6**
Turkey was drawn completely	**9**	**22,5**	**10**	**31,3**	**19**	**26.4**
Turkey was partly drawn	**21**	**52,5**	**15**	**46,9**	**36**	**50,0**
Only European part of Turkey (Thrace) was drawn	*4*	*10,0*	*6*	*18,8*	*10*	*13.9*
Only the western part of Anatolian Peninsula was drawn	*17*	*42,5*	*9*	*28,1*	*26*	*36.1*
Total	**40**	**100,0**	**32**	**100,0**	**72**	**100.0**

4. DISCUSSION

In our research participants started drawing maps from mainly three locations: Scandinavian Peninsula, Iberian Peninsula and Turkey. Participant choice of the Scandinavian and Iberian peninsulas as their starting point is interesting because of the fact that Scandinavian and Iberian mark the north-western and south-western coasts of continental Europe. During the process of perceiving and representing a place, a similar finding appeared during the stage of categorizing the components which form the physical environment in Holding's (1992) work. Depending on the findings of the study, taking components as reference point and their location compared to each other effects the categorization process.

Turkey, being one of the often used reference points, indicates the importance of the participants own location. Adding to this, the fact that fourth year students used Turkey more than the first year students as their starting point might show the influence of geography education. Gustafson (2001) who associates "place" distinctiveness with their meanings, states that a meaningful place would be a definable and a distinguished territorial unit. To

differentiate is a basic feature of individual and social cognition; categorization is an attribution process regarding similarities/differences and drawing the borders. During the researchers interviewing process it was seen that the participants used "here"/"there", "at home/away" and sometimes "us/them" when differentiating places. In our research, a majority of the participants have put themselves in Turkey as the "here" point and start drawing their maps.

The fact that graphical-styled maps have the highest percentage and drawing style changes between first and fourth year students reflects the effect of geography education. This effect can be seen not only with the drawing style but also with the components that were given place on the maps. Against only neutral-geographical components dominancy (64%), the rareness of only ideological-symbolic components (7%) is also reflecting this effect. Beck and Wood (1976) and Milgram (1972) also showed education's effect on the ability to draw graphical style maps. According to Beck and Wood (1976) mental maps are scribble outcomes of the participants and also only consists of personal views of the world's geographical structure. The participant experience in using maps and positive approach to map, contributes to how good and accurate their map is. The knowledge of map reading has a positive effect on drawing a map.

In Andreesen's work (1997) where a different criteria was used evaluating the correctness of the maps, the participants wrote 58% of the Asian country names correctly. Even though the number of places shown on the map increases from the first year to fourth students, considering that our sample group was formed by geography students, one could conclude that the overall number is low and more would be expected from the participants. An explanation to this might be Turkey's candidature for the European Union as the continent of Europe is something more than just a geographical place in the students' mind. During the Turkey's EU candidature process Europe is being discussed with different aspects in daily public life which transforms Europe more into a political being than only a geographical continent. The 8.4 percentage of the neutral-geographical units (place names, physical geographical components) illustrates participants' lack of awareness about geographical Europe. In the geography department where the research was carried out, the only course regarding Europe is the "European Union", a fourth year course which is optional. This makes the students' lack of knowledge about Europe understandable as they are unable to find various courses at different levels to get to learn more about Europe. However, as Villanueva *et.al*. (2009), note that in different European countries like Austria, Ireland and Spain, geography curricula include courses on *different regions of Europe*, *regional development in Europe* and *the geography of European Union*. Villanueva et al. (2009:79) focus on the context of Turkey and state that "*programs must be updated in terms of content, approach, educational methods and learning processes. Geography of education must include a 'geography of Europe' which takes account of the increased plurality of the world as it is now and as our students will find it in the years ahead.*"

When we examine the dispersion of the countries which were mentioned within the maps, we can see two major zones. These are "Great Britain-Greece-Italy" and "Spain-France-Germany". Great Britain, Greece and Italy are the countries whose names were mentioned the most. When this group was emerging, each of the countries' unique attributes might have played a role: Greece being a close neighbour of Turkey (neighbourhood context), Italy's unique geographical "boot" shape which makes it easier to draw and Great Britain both because of being an island country and a strong political player. Milgram and Jodelet (1976) during his work on psychological mapping of Paris, found out that most of the participants started drawing the map from the borders of Paris. The reason behind this is that Paris has very clean-cut borders and furthermore distinctive features of the environmental components have a positive effect on their perception and representation. Not only stylistic features of the

physical environment but also pattern and frame wise have an influence on how the place is perceived and represented, according to the authors, physical environments topographic and geometric attributes have a direct effect on mental representation (Jansenn-Osmann, & Wiedenbauer, 2004; Tversky, 2000).

The second zone is formed by Spain, France and Germany. The distinctive features of these countries might have played a role forming this pattern as well. Being Western Europe's strong political players and because of their relations with Turkey (immigration, economical relations, tourism etc.) Germany and France, and being Europe's South-West coast (with Portugal) Spain has a place in this zone. Turkey was shown in the third degree, this illustrates the importance of Turkey being a part of Europe and the place where the individual is when drawing a map. The striking difference between West and East Europe is another interesting point of this distribution pattern. While the Western European country names were remembered at a high rate, knowledge about the countries around Eastern Europe and the Balkans was rather low. Considering the fact that Eastern Europe and the Balkans were very unstable during the past two decades, the political ambiguity of the region might have impacted on the students not having clear knowledge of the region. Beck and Wood (1976) searched for the answer to the question how attributes of a geographical environment affected the process of forming an image and the places that were drawn with most mistakes are the ones that are constantly changing.

Turkey's appearance on the cognitive maps is important as it provides us clues about participant thoughts about Turkey belonging to Europe. The participants who showed Turkey partially can be divided into two groups: (1) Considering the physical borders of Europe which ends with Istanbul and Çanakkale straits and showing Turkey with only its Thrace region, (2) Drawing the western part of the Anatolian Peninsula referring to the development difference between Turkey's Western and Eastern regions. Thereby for some participants the idea of Europe is formed only within the physical borders and for others the idea is formed relatively to the economic development rate. Since "map makers are human" as Wright (1966) so aptly expressed it, every map is "a reflection of objective realities and partly subjective elements." Because of the amount of information condensed on maps, they provide a rich resource for studying the geographical knowledge and values of the mapmaker and the mapmaker's society (Henrikson 1979). A new study which identified Lynch's (1960) notion of readability within social context proved that cultural context is an important factor in means of environments social readability and construction of the meaning (Ramadier and Moser, 1998); characteristics of the environmental meanings (physical, functional and border attributes) can be understood relating to the cultural context.

These cognitive maps are important in some ways in aspect of education as well. As *The Common Framework for Europe Competence* indicates that knowledge on topography of Europe is important to build a European competence (Maslowski *et.al.* 2009:18). Although described as very important, there is no definitive description for that basic knowledge of European topography. Some countries such as the Netherlands have a list of what topographic features geography students are expected to know (De Tekstgroep 2009, CITO 2012). However it is quite important for candidate teachers to have a deep knowledge about Europe, the results of the Turkish geography students, as prospective geography teachers, show that such knowledge they have seems to be quite limited.

Another aspect for education may be related to detecting the misconceptions on the cognitive maps of the students. As the Roper Report (2006) about geography literacy, misconceptions play an important role in the geographical knowledge construction. Detecting those misconceptions about Europe can help to make the students aware about the existing of these conceptions during their training at university but also for their possible future work in educational settings. In this research, as mentioned in the results, countries such as

Czechoslovakia and Yugoslavia are still appearing on the cognitive maps which indicated the need for an actualized course programme about Europe.

Emphasizing on the goals of geography, Gershmel (2008:97) remarks the importance of knowledge of places and knowledge of how to arrange them. Thus the level of knowledge or how this is arranged and illustrated on the cognitive maps may show how much these geographical goals are reached. The findings of this study indicate the need for extra efforts to make Europe being perceived more correctly both politically and geographically in Turkey. Actually, authors studying on geographical higher education in Turkey and its problems, attract attention to the need for actualization in geography programmes (i.e. Koçman 1999, Kayan 2000). More specifically, focusing on European dimension of geographical higher education in Turkey, Öztürk (2006) concludes that there is common dissatisfaction amongst many student teachers concerning the content of the EU modules they received. As shown in our research that even with a sample group with high expectations in the field, the actual knowledge is rather low making the efforts necessary. Finally, it is important for this research to be repeated in different geography departments and the comparative study of the outcomes (Anderssen, 1997) is crucial for enhancing geography education policies.

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