

**Perceived Diversity of Complex  
Environmental Systems:  
Multidimensional Measurement  
and Synthetic Indicators**

Ugo Gasparino, Barbara Del Corpo  
and Dino Pinelli

EURODIV PAPER 3.2006

**APRIL 2006**

KTHC - Knowledge, Technology, Human Capital

Ugo Gasparino and Barbara Del Corpo, *Fondazione Eni Enrico Mattei*  
Dino Pinelli, *University of Bologna*

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- **First Conference “Understanding diversity: Mapping and measuring”**, 26-27 January 2006, FEEM, Milano, Italy. Contact person: Valeria Papponetti, [valeria.papponetti@feem.it](mailto:valeria.papponetti@feem.it)
- **Second Conference “Qualitative diversity research: Looking ahead”**, 19-20 September 2006, K.U.Leuven, Leuven, Belgium. Contact person: Maddy Janssens, [maddy.janssens@econ.kuleuven.ac.be](mailto:maddy.janssens@econ.kuleuven.ac.be), and Patrizia Zanoni, [patrizia.zanoni@kuleuven.ac.be](mailto:patrizia.zanoni@kuleuven.ac.be)
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This batch of papers has been presented at the first EURODIV Conference “Understanding diversity: Mapping and Measuring”.

# **Perceived Diversity of Complex Environmental Systems: Multidimensional Measurement and Synthetic Indicators**

## **Summary**

The general attitude towards the sustainable management of environmental resources is evolving towards the implementation of 'participatory' (as opposed to the classical 'command and control') and, especially at local scale, 'bottom up' (as opposed to the classical 'top down') approaches. This progress pushes a major interest in the development and application of methodologies able to 'discover' and 'measure' how environmental systems tend to be perceived by the different Stakeholders. Due to the 'nature' of the investigated systems, often too 'complex' to be treated through a classical deterministic approach, as typical for 'hard' physical/mathematical sciences, any 'measurement' has necessarily to be multidimensional.

In the present report an approach, more typical of 'soft' social sciences, is presented and applied to the analysis of the sustainable management of water resources in seven Southern and Eastern Mediterranean Watersheds. The methodology is based on the development and analysis (explorative factor analysis, multidimensional scaling) of a questionnaire and is aimed at the 'discovery' and 'measurement' of a latent multidimensional 'underlying structure' ('conceptual map').

It is the opinion of the authors, that the identification of a set of 'consistent', 'independent', 'bottom up' and 'shared' synthetic indicators (aggregated indices) could be strongly facilitated by the interpretation of the dimensions of the emerging 'underlying structure'.

**Keywords:** Participative Approach, Cognitive Map, Factor Analysis, Indicators of Sustainability, Sustainable Water, Management

**JEL Classification:** C13, C42, D74, Q01, Q25

*The presented Methodology has been developed and applied in the Framework of the OPTIMA (Optimisation for Sustainable Water Management) Project, financed by the European Commission (6<sup>th</sup> Framework Programme of Research, INCO-MPC). We would like to thank all OPTIMA partners for fruitful discussions and for taking care of the compilation of the Questionnaires, by Interviewing local Stakeholders.*

*Address for correspondence:*

Ugo Gasparino  
Fondazione Eni Enrico Mattei  
Corso Magenta, 63  
Milano 20123  
Italy  
E-mail: ugo.gasparino@feem.it

The starting point of this research<sup>1</sup> is the assumption that the memory of a controversial social event could (1) nourish tensions and could (2) reactivate new conflicts. That is why we need a better understanding of the relationships between the memory of controversial events and the social / political attitudes in inter-group conflicts. The first thing to do in this respect is however to analyze the memories *per se*, i.e. to reveal if and eventually what factors could have an impact on the memories, which different groups of people have about the same event.

In this context, the central questions discussed in this paper are: *How do people remember historical events?* and *What factors could influence the memory of a controversial social event from the near past?*

A controversial social event is defined as an event that could be differently understood and remembered by the opposing groups, which it concerns.

The controversial social event chosen in the study is “The state policy of changing the names of Turkish population in Bulgaria”. It was the major element of the so-called “revival process” aiming at exterminating the ethnic differences in Bulgaria. The revival process known also as “ethnic cleansing” was a state strategy implemented for around six years period between 1984 and the late 1989. In order to reveal the scope of specific episodes (moments) of that event, in a previous study 120 respondents (ethnic Bulgarians and ethnic Turks) were asked to describe the most important episodes (moments) of the event. As it was expected, the memory of the event labeled “changing the names” is composed of many particular elements. For example, the individual memories about the event accentuate different aspect of that event such as: soldiers in the streets, frequent passport controls, midnight checks at private homes, arrests, prohibition of the usage of Turkish as maternal language, dismissal from work, prohibition of the national clothing

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<sup>1</sup> This research is a part of a cross-cultural project supported by a grant from the CERGE-EI Foundation under a program of the Global Development Network. Additional funds have been provided by the Austrian Government through WIIW, Wien. All opinions expressed are those of the author and have not been endorsed by CERGE-EI, WIIW, or the GDN.

and religious ceremonies, bomb-attempts at the train stations, and of course compulsory change of the names, the latter being the most frequently mentioned.

In order to include the event (and its concrete moments) in the long-term memory two processes have to take place: 1) Evaluation of the novelty and/or the unexpectedness of the event; 2) Evaluation of the significance (mainly individual but not only) of the event. The information about the event is kept into the long-term memory if the event is perceived as very unexpected and very significant (mainly for the well-being of the individual).

Three concepts of memory appear to be theoretically useful in the context of this research. First, the concept of “flashbulb memory” proposed by R. Brown and J. Kulik (1977). This is a memory of a surprising event, emotionally loaded, having important consequences, and containing context’s elements of the event. It consists of the memories people have of where they were, what they were doing, who else was also there, etc. when a surprising (even shocking) and emotionally loaded event occurred. The definition of flashbulb memory distinguishes between the information about the event and the personal context in which this information was perceived - the concept referring to both aspects of the memory. In order such “vivid” and “sharp” memories to be formed, a high level of surprise as well as a high level of emotional arousal should be present.

Second, the concept of “episodic memory” defined as a store for kinds of information a person includes in his/her life story. This is a memory of a personally experienced event (or series of events composing an episode). It consists of the remembering both the event *per se* and the experienced emotions when it happened. The person could be both an actor in and an observer of the event. In both cases, the crucial prerequisite of the episodic memory is the role of the “experiencer” / “rememberer”, or in other words, the episodic memory is closely related to the “self” as an accumulator of episodic experience. The third and most rarely used concept is the so-called “autobiographical memory”, which could be seen just as another term for the episodic memory. The difference between the two is too delicate (if any, according to some authors) and for the purposes of our study, it is not necessary to open a discussion about it.

Apparently, these concepts are not contradictory but complement each other in the way the levels of human memory are analyzed. In our research, it is quite probable that the memory of the ethnic Turks about the social event “changing the names” is better reflected by the term flashbulb memory (*their* names were to be changed, so the event was experienced as having great personal significance and was probably very surprising). The term episodic memory would be perhaps more appropriate to describe the memory of the ethnic Bulgarians of the same event (they were predominantly witnesses of the event – the surprise was probably also high but the level of personal significance should be much lower). That does not mean that the event was not at all dramatic for the ethnic Bulgarians. There were bomb attempts organized by ethnic Turks; the everyday relationships between ethnic Turks and Bulgarians, which used to be calm and harmonious (as between good neighbors) impaired and hostile patterns of behavior began to occur.

This brief introduction brings up the conclusion that the memories of the two ethnic groups of that controversial event could be quite different. The question is however, are there any other factors, except one’s ethnic origin, which could influence the memories of people, who have experienced to a different extent the impact of the ethnic cleansing policy and have witnessed or suffered the event of “changing the names of ethnic Turks”?

The assumption of this study is that the memory depends on a complex, multidimensional structure of indicators of cultural diversity.

What is needed immediately at that point is a definition of “culture”. A broad one seems very reasonable considering our aim to enlist the indicators of cultural diversity, therefore in the present study we have adopted the definition of Sterling (2002) who defines “culture” as: “... used to describe the material traits of a group or sub-group. Culture does not encompass all traits of a particular group; only those “material” traits that define the group as separate from other groups. It includes factors like religion language, dress, social custom, and food.”

With respect to the historical event being a memory object, the following two panels of indices of cultural diversity are chosen:

The first panel is provisionally called *traditional* indicators of cultural diversity. It includes: *Ethnicity* - Bulgarians vs. ethnic Turks; the both groups live in Bulgaria and have a Bulgarian citizenship; *Maternal language* - Bulgarian vs. Turkish; *Religion* - Christian vs. Muslim; *National identity* – Bulgarian / respectively Turkish vs. European.

The second panel consists of *social orientations* - individualistic vs. collectivistic. They express some of the core values and shared believes in a given society, community, or group, which at the end of the day substantiate the essence of its “culture”.

The intensive study of the construct individualism-collectivism began about 25 years ago, when in 1980 Geert Hofstede published his book *Culture's consequences, international differences in work related values*, now considered the classical contribution in the field. In his analysis, individualism is conceptualized and empirically proved as one of the basic dimensions differentiating cultures (parallel to other three dimensions – masculinity, uncertainty avoidance, and power distance). Based on the core assumption about the essence of individualism, namely, that individuals are independent from one another, defining the construct Hofstede puts the stress on several elements— one's rights are above his duties, concern for oneself and one's nuclear family, emphasis on personal autonomy and self-fulfillment, one's identity is based on the personal accomplishments.

Later on Harry Triandis (1985) suggested that if we look from a closer distance to a prototypical individualistic culture (e.g. USA or Canada) as well as to a prototypical collectivistic culture (Japan or China) inter-individual differences will be discovered as to extent of holding individualistic (respectively collectivistic) values and believes. In other words, in each culture independently how individualistic or collectivistic it is as a whole, there are both individualists and collectivists. H. Triandis proposed to use the terms *idioncentrism* and *allocentrism* to label the maintenance of individualistic or collectivistic values and believes at individual level.

Since these early studies, a vast amount of theoretical and empirical research has been conducted to illustrate that there are remarkable differences between Western and Eastern countries with respect to the implications of individualism and collectivism (both

at cultural and at individual level) for the basic psychological functioning – the definition of self-concept and self-esteem, association with certain personality traits, an overall feeling of well-being, emotions and emotional expression, attribution styles, communication and conflict resolution styles, and social behavior as a whole (for the review of this research see for example Oyserman et al., 2002; Nisbett, 2003).

Probably one of the most intriguing issues in this respect refers to the cultural differences in perception and cognition. Summarizing, as he says, historical, anecdotal and systematic scientific evidence (the empirical data is not very rich yet) Nisbett concludes that “...Westerners and Asians literally see different worlds. ... modern Westerners see a world of objects – discrete and unconnected *things*. ... modern Asians are inclined to see a world of substances – continuous masses of *matter*. ... Westerners have an analytic view focusing on salient objects and their attributes, whereas Easterners have a holistic view focusing on continuities in substances and relationships in the environment.” (2003, p. 82).

In this research an attempt is made to test the possibility that individualistic *vs.* collectivistic orientation, measured at individual level (that is, conceived as an individual characteristic reflecting one’s preferred beliefs and values) could influence the memories.

*Position in respect to the event* (witness *vs.* victim *vs.* both) is included as a factor that could influence the memory. Although objectively most of the ethnic Turks were victims, and most of Bulgarians were witnesses, the subjective perception and memory of one’s own role during the event could be different.

Finally a control panel of commonly used *socio-demographic parameters*: gender, age, educational level, place of residence, monthly income. The expectation is that controlling for these factors will contribute to the clarification of how the cultural diversity influences the memory of the social event.

## **Method**

The research is of a *psychological inquiry* type, using a questionnaire.

### *1. Memory of the controversial event:*

To analyze the memory of the controversial event a set of variables, traditionally used in the study of a flashbulb memory (e.g. Conway, 1995), was used. It comprises 12 variables:

- *Surprise* – Ss rated the extent to which they felt surprised when they first learned about the event.

- *Intensity of the emotions* – Ss rated their emotional reactions' intensity in that moment.

- *Personal importance* – Ss rated the importance they thought the event might have personally for them.

- *National importance* - Ss rated the importance they thought the event might have for the country.

- *Remembering* – Ss rated the extent to which they listened to (watched, read) news (radio, TV, newspapers), concerning the event.

- *Reactions of other people* – Ss rated the intensity of the other people's reactions during the event.

- *Sharing information* – Ss rated the extent to which they shared information, discussed the event with the other people (relatives, friends, colleagues, etc.).

- *Sharing emotions* – Ss rated the extent to which they shared the experienced emotions (showed their feelings about the event) with the other people.

- *Autobiographical details* – Ss rated the extent to which they remember what they were doing those days.

- *Event details* – Ss rated the extent to which they remember and could give details to describe the event.

- *Opinion of other people* – Ss rated the extent to which the other people had a different opinion about the significance of the event and its consequences.

- *Influence of other people* - Ss rated the extent to which the other people tried to influence (change) their opinion about the significance of the event and its consequences.

A 5-point scale (1-*not at all* to 5-*very much*) was used to measure all memory-variables.

A total score for the memory is calculated – represented by the mean value of all the 12 memory variables. It comprises memory of the event per se as well as the event's context. Usually it is referred to as “vividness” of the memory.

Additionally, several other scores reflecting different combinations of the separate memory variables were also calculated. The first is reflecting the essence of the flashbulb memory and is represented by the mean value of the first 8 variables, which are typical for that type of memory. The second score concerns the memory of details – both about the event and the autobiographical memory – and is also represented by the mean value of these two variables. The third score is related to the relationships with other people. It is a mean value of the variables – “Opinion of other people” and “Influence of other people”.

## *2. Indicators of cultural diversity:*

*Traditional* indicators were: *Ethnicity, Maternal language, Religion*. Perceived *National identity* (Bulgarian/Turkish vs. European) was measured by answering the question: “If your identity could be represented as a proportion of Bulgarian or Turkish identity (for Bulgarians and ethnic Turks respectively) on the one hand and European identity on the other, which of the following variants best shows your preference?” Respondents have to choose one of the following options: 100% Bulgarian (Turkish) – 0 % European; 75% Bulgarian (Turkish) – 25 % European; 50% Bulgarian (Turkish) – 50 % European; 25% Bulgarian (Turkish) – 75 % European; 0% Bulgarian (Turkish) – 100 % European.

*Social orientations* (individualistic vs. collectivistic) were measured by the Bulgarian individualism-collectivism scale (BIC scale) (Gerganov, et al., 1996). The procedure differs significantly from the questionnaire approach. Applying the psychosemantic methodology 7 concepts (values), which form the individualism-collectivism dimension, are extracted in the respondents' semantic space. The concepts are: *success, self-confidence, wealth* (typical individualistic values), *cooperation, justice, order, traditionality* (typical collectivistic values). Ss have to make a preference choice between the two concepts in each of the possible pairs of the 7 concepts (21 pairs). The method allows to reach a twofold aim – first, to reveal the shared representation

(meaning) of the abstract concept of individualism (respectively collectivism), and second, to obtain individual scores indicating the degree of individualistic or collectivistic orientation of each subject.

Individualism-collectivism dimension received in our study and the scale values of each concept are as follows:

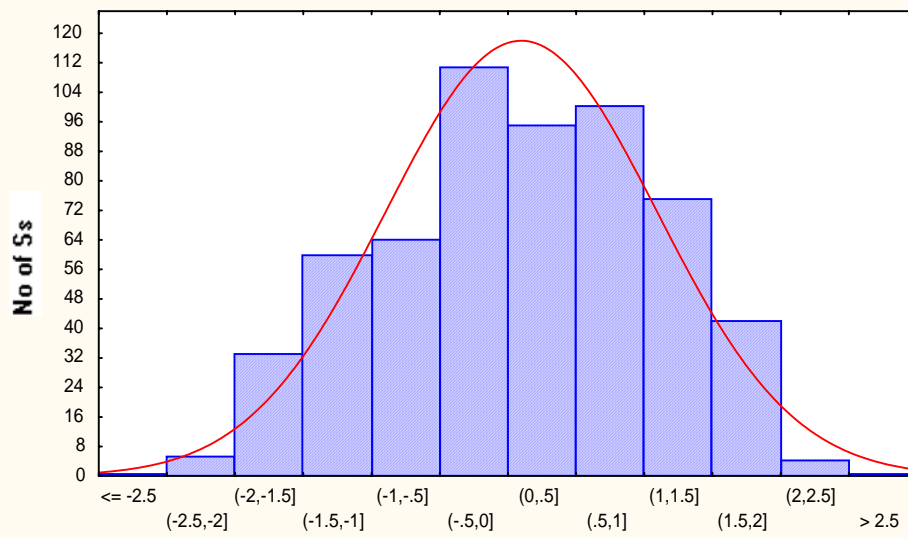
Wealth	-1.919
Success	-0.614
Self-confidence	-0.378
Cooperation	0.354
Traditionality	0.416
Order	0.749
Justice	1.393

The distribution of the participants along the individualism-collectivism dimension is normal (Fig. 1). The group of Ss having individualistic or collectivistic orientations (so called individualists and collectivists) were formed by the method of quartiles – each group comprising 148 Ss.

*Sample.* 589 Ss participated in the study. Most of them live in middle size towns with mixed (ethnic Bulgarian and ethnic Turkish) population.

Table 1 presents the distribution of the Ss according to the socio-demographic parameters. The total of respondents in each socio-demographic category differs from 589 (the total number of respondents) since some respondents were excluded from analysis due to missing data and non-response.

**Fig. 1 Histogram of individualism-collectivism dimension**



*Table 1. Sample description*

		N	%
Ethnicity	Bulgarians	348	60
	Ethnic Turks	233	40
Gender	Males	256	46
	Females	306	54
Age	18-30	87	15
	31-40	166	28
	41-50	179	30
	51-60	95	16
	61-87	62	11
Education	Basic	42	7
	Secondary	254	43
	Higher	290	50
Monthly income	100 Eu	134	23
	100-300 Eu	302	52
	> 300 Eu	145	25
Place of residence	Village	83	14
	Town	494	86

## Results

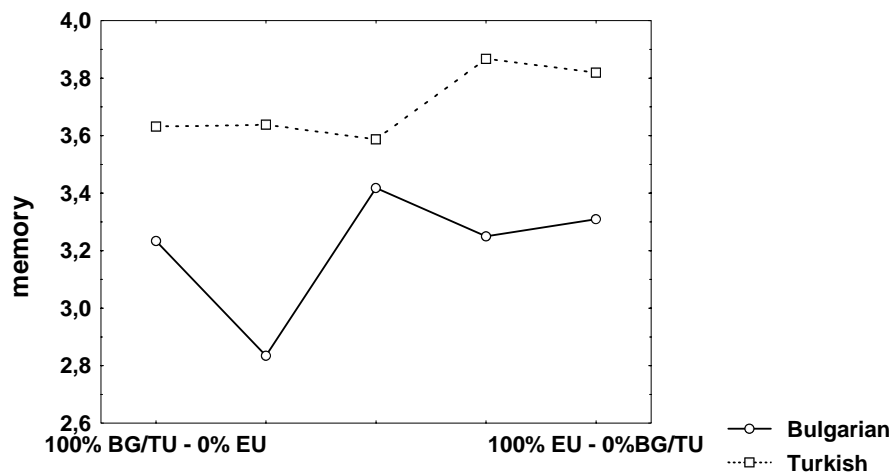
### 1. *Vividness of the memory*

The factors influencing the memory of a controversial event were addressed in a series of ANOVA tests and henceforth we will commence by presenting the results about the factors influencing the total score of memory (comprising the memory about the event as well as the memory of its context). As it is reasonable to expect the *traditional* indicators of cultural diversity - ethnicity, maternal language and religion - have a significant effect on the memory (respectively  $F_{(1,579)} = 60,29$ ,  $p < .000$ ;  $F_{(1,576)} = 50,89$ ,  $p < .000$ ;  $F_{(1,573)} = 61,98$ ,  $p < .000$ ). The ethnic Turks have more vivid memories of both the event *per se* and the personal context in which it occurred. With few exceptions, the maternal language of the ethnic Turks in Bulgaria is Turkish and their religion is Muslim. Therefore if one has to choose indicators of cultural diversity only one of these three would suffice for differentiating people.

To obtain a better understanding of the impact of ethnicity factor (and related to it – maternal language and religion) the *perceived national identity* was also measured. The assumption is that in the context of Bulgaria's accession to the European Union a new type of identity begins to appear, namely the European identity, as opposite or at least different from the national identity. It is interesting to see if the two types of identities influence the controversial event's memories independently from one another. Perceived identity was measured as the degree to which one considers him or herself as a Bulgarian (and respectively a Turk) vs. European. The precise operationalization of this definition is exemplified by the following questionnaire item: "If your identity could be represented as rapport of Bulgarian or Turk and European identity, which of the following alternatives best shows your preference?" The participants have to choose one of the following answers: "(I consider myself as): 100% Bulgarian (Turk) and 0% European; 75% Bulgarian (Turk) and 25% European; 50% Bulgarian (Turk) and 50% European; 25% Bulgarian (Turk) and 75% European; 0% Bulgarian (Turk) and 100% European".). The results show that perceived identity has a significant impact on the memory ( $F_{(4,541)} = 4,60$ ,  $p < .001$ ). As a general tendency, the vividness of the memory increases with the increase of the European identity and respectively the decrease of the Bulgarian or the Turkish identity. This result offers some evidence that the subjectively perceived national

identity is not exactly the same as the objective factor “ethnicity” and should be considered as an independent indicator of cultural diversity. Moreover, a 2-way ANOVA (national identity/ethnicity) showed significant interaction effect ( $F(4,528) = 3,19, p < .01$ ; Fig. 2)

**Fig. 2. Memory depending on ethnicity and perceived national identity and perceived national identity**  
 $F(4,528)=3.19; p<.0132$



As far as the socio-demographic parameters are concerned, the present research results indicate that almost all of them indeed influence the memory of the controversial event. In brief, the persons with a more vivid memory are: the males ( $F(1,560) = 4,88, p < .03$ ); the respondents living in villages ( $F(1,575) = 11,96, p < .001$ ); the elderly people ( $F(4,584) = 6,00, p < .000$ ); and the richer people ( $F(2,578) = 2,76, p < .06$ ). The level of education does not have an impact on the vividness of the memory ( $F(2,583) = 1,80, ns$ ), however the post-hoc comparison between the means (Duncan-test) revealed statistically significant difference between respondents with primary and secondary education ( $p < .04$ ): the less educated people have the most vivid memory; those with secondary education - the less vivid; and those with higher education being in the middle position.

The social orientation was not found to have an impact on the total score of memory vividness ( $F(1,295) = .74, ns$ ). Nevertheless, looking at the interaction effects between the social orientations and the demographic parameters we have found a statistically significant effect with the age ( $F(4,287) = 2,518, p < .04$ ): younger people (aged

between 18 and 40) having individualistic orientation have more vivid memories. This result indicates that, even though not independently, the social orientations are a factor having an impact on the memory of a social event.

In a series of 2-way ANOVA tests, we have also tested for a possible interaction effect between the socio-demographic characteristics and ethnicity. All the results are negative with the only statistically significant difference in the memory between ethnic Turkish men and ethnic Turkish women, the latter having less vivid memories ( $p < .02$ ). The memory of Bulgarian men and women does not differ and there is no effect of interaction of the two factors ( $F_{(1,550)} = 1,34$ , ns). This result is useful to explain that the main effect of gender on memory – the women having significantly less vivid memory – is due to the ethnic Turks female group.

## 2. *Memory of details about the event.*

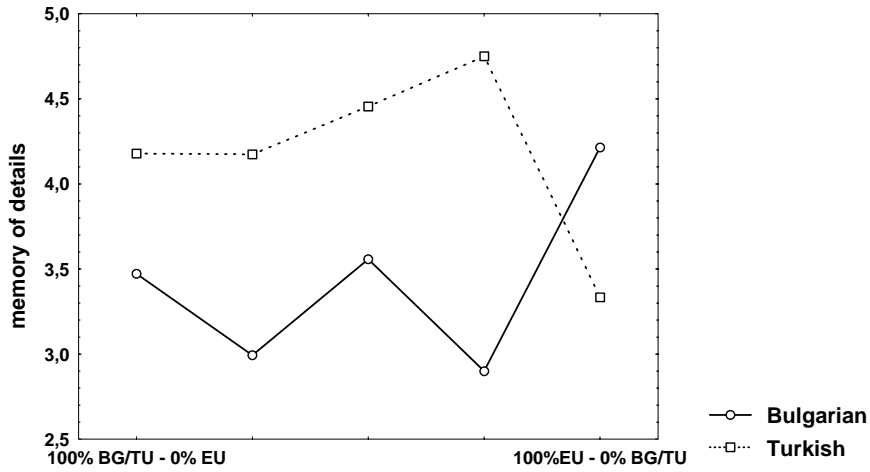
A separate score for the memory of details is made on the basis of two memory variables: Memory of *autobiographical details* (“What I was doing those days”); Memory of *event details* (“I can describe the event by giving details about it”).

Ethnicity, maternal language and religion have a significant effect on the memory of details (respectively,  $F_{(1,579)} = 68,83$ ,  $p < .000$ ;  $F_{(1,576)} = 53,68$ ,  $p < .000$ ;  $F_{(1,573)} = 70,99$ ,  $p < .000$ ) with ethnic Turks remembering better both the event and the autobiographical details.

Perceived national vs. European identity is the next factor influencing the memory of details ( $F_{(4,541)} = 3,72$ ,  $p < .005$ ) – the increase in the feeling of having an European identity is related to better memory of details. Again 2-way ANOVA (national identity/ethnicity) showed significant interaction effect ( $F_{(4,528)} = 2,72$ ,  $p < .03$ ; Fig. 3)

**Fig. 3. Memory of details depending on ethnicity and ethnic identity  
(Bulgarian/Turkish vs European)**

$F(4,528)=2.72; p<.0288$

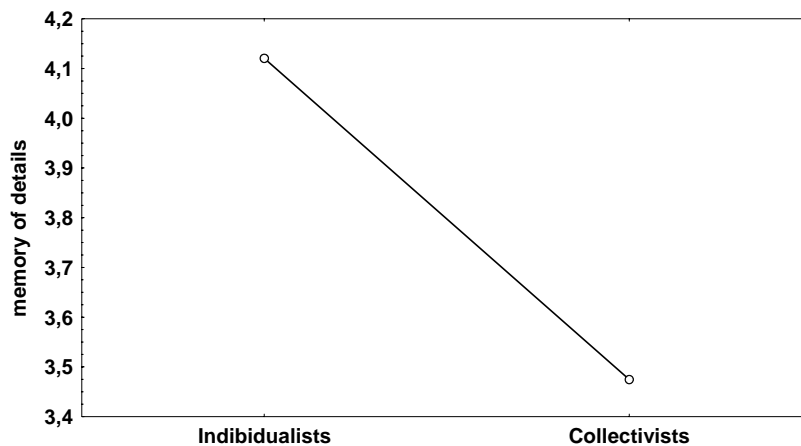


The impact of the ethnicity factor on the memories of details is not related to any of the socio-demographic parameters (no statistically significant interaction effects were found).

The memory of details is however influenced by the social orientations ( $F(1,295) = 15,75, p<.000$ ): the individualists remember better the details about the event as well as details of their personal everyday life during the event (Fig. 4) while none of the socio-demographic parameters makes any difference in that respect (significant effects of interactions were not found).

**Fig. 4 Memory of details depending on social orientations  
(individualism - collectivism)**

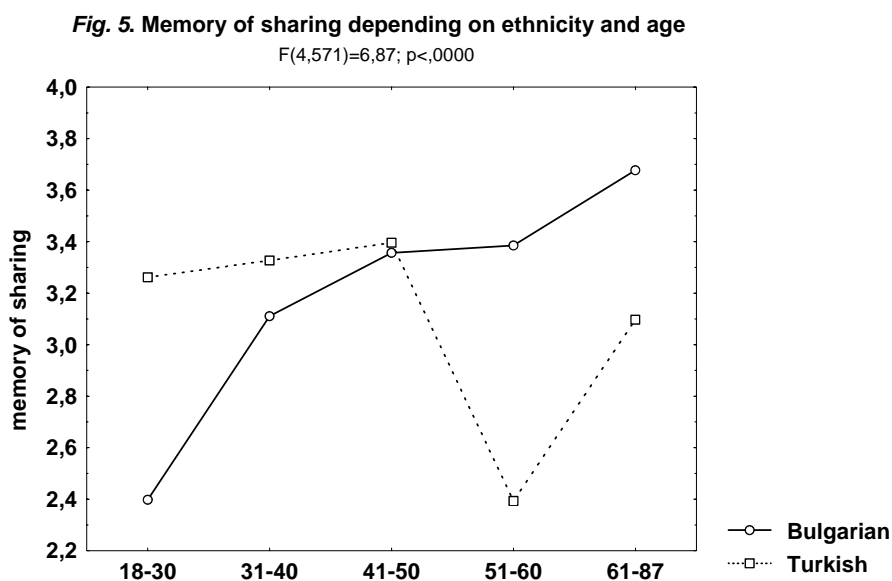
$F(1,295)=15,75; p<.0001$



### 3. Memory of the relationships with other people.

A) *Sharing with other people*: A score for the memories of the relationships with other people was formulated based on two variables: a) *Sharing information* (the extent to which the respondents shared information and discussed the event with the other people - relatives, friends, colleagues, etc.); b) *Sharing emotions* (the extent to which the respondents shared the experienced emotions with other people or expressed their feelings about the event).

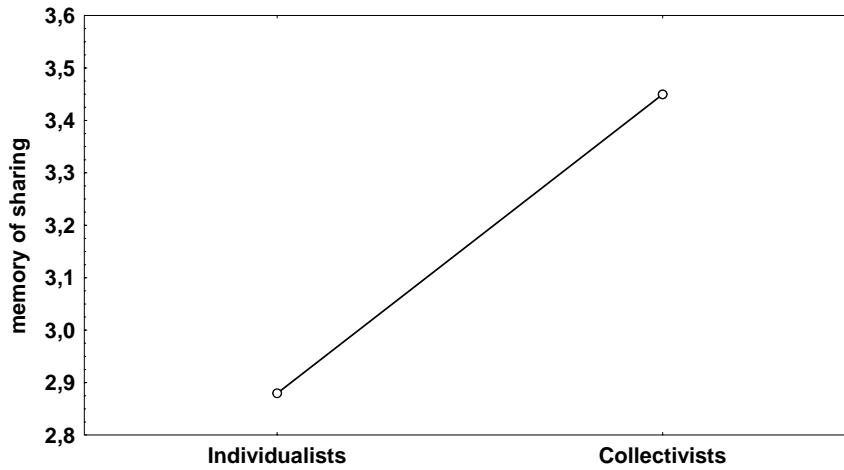
The present analysis reveals that the traditional factors of cultural diversity – ethnicity, maternal language, religion – as well as perceived ethnic identity are not related to memories of *sharing with other people*. We have obtained only one interaction effect between ethnicity and age ( $F_{(4,571)} = 6,87, p < .000$ ; Fig. 5) indicating that the memory of the ethnic Turks above the age of 50 (i.e. those who were older than 30 during the time of the event) about sharing with other people is less pronounced than the memory of the ethnic Bulgarians.



The social orientations on the other hand influence significantly that part of the memories ( $F_{(1,295)} = 14,08, p < .000$ ): the collectivists remember that they were involved in a stronger relationship of sharing both information and emotions in comparison with individualists (Fig. 6).

**Fig. 6. Memory of sharing depending on social orientations  
(individualism - collectivism)**

$F(1,295)=14,08; p<,0002$

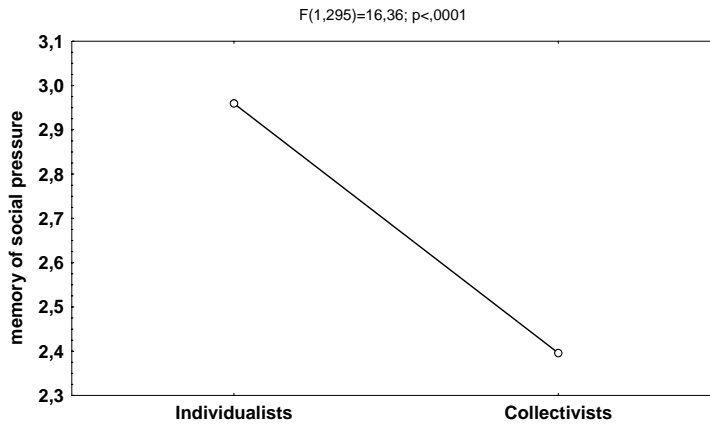


*B) Perception of being different from the others and under social pressure.* To form the score for this particular type social-interactions memory we have combined two variables: a) Perception of other people opinions about the significance of the event and its consequences as *being different* from one's own opinions; b) Perception of being under *a social pressure* to change one's own opinions about the significance of the event and its consequences.

The factors influencing this type of memory are one's ethnicity, maternal language, religion, and perceived ethnic identity (respectively,  $F(1,579) = 94,77, p<.000$ ;  $F(1,576) = 89,15, p<.000$ ;  $F(1,573) = 94,51, p<.000$ ;  $F(4,541) = 4,59, p<.001$ ). The ethnic Turks remember that during the event their own opinion differed from the opinions of other people and that they were under a pressure the change their opinion.

The social orientations have an impact on the memories of this kind of social relationships ( $F(1,295) = 16,36, p<000$ ) as well – the individualists have a stronger memory of having different opinion and being under a social pressure. Again, no interaction effects with socio-demographic parameters were found.

**Fig. 7. Memory of having different opinions and being under social pressure depending on social orientations**



#### *4. Flashbulb memory – intensity of the emotions and context of the event*

The total score for flashbulb memory was formed in order to reflect two of the main components of that type of memory – emotions intensity and context of the event. It comprises eight memory variables: 1) Surprise; 2) Intensity of the experienced emotions in that moment; 3) Personal importance of the event; 4) Evaluation of the event's national importance; 5) Remembering the information from different media; 6) Evaluation of the intensity of other people reactions; 7) Sharing information and discussions with others; 8) Sharing emotions with other people.

The factors having a significant impact on the flashbulb memory are ethnicity, maternal language, religion, and perceived identity: respectively,  $F(1,579) = 14,30, p<.000$ ;  $F(1,576) = 11,92, p<.000$ ;  $F(1,573) = 14,86, p<.000$ ;  $F(4,541) = 2,69, p<.03$ . The ethnic Turks have stronger flashbulb memories than the ethnic Bulgarians. A decrease in one's national identity accompanied by an increase in one's European identity is also related to stronger flashbulb memories. An interaction effect was found also between ethnicity and age ( $F(4,571) = 3,58, p<.007$ ) – the ethnic Turks at the age of 18-50 years have stronger flashbulb memories than Bulgarians, while the memories of elderly people from the two ethnic origins do not differ.

There is a slight tendency of social orientations influencing the flashbulb memory ( $F(1,295) = 3,04, p<.08$ ) with collectivists having stronger memories, i.e. they recall better the emotions experienced during the social event, as well as its overall context – other

people reactions, discussions, mass-media information, etc. An interaction effect is found with age ( $F_{(4,287)} = 2,69, p < .03$ ) – collectivists above 40 years have stronger memories.

### **Discussion and conclusions**

The results of this research could be discussed in a twofold way. Firstly as contributing to the knowledge of remembering a controversial event and secondly from a methodological point of view as contributing to the subject of establishing indicators for diversity.

The memories of the two groups (ethnic Bulgarians and ethnic Turks) who have experienced to a different extent one and the same event, namely “the state’s revival policy” are different. The memories of the ethnic Turks are significantly more vivid. This group has much more memories about the different details of the event as well as about the different events (not directly related to the controversial political event) from their personal life during that time. The flashbulb memories of the ethnic Turks are much stronger, i.e. they remember very well both the event details and the personal context in which it has happened. Finally, this group of people have memories of feeling different from the others, having different beliefs and values as well as being under a pressure to change their opinions.

The memories of the ethnic Bulgarians on the other hand, are not so sharp. The ethnic Bulgarians can mention few details about the event, and altogether, their memories are not of a flashbulb type. Although most of the ethnic Bulgarians and especially those living in mixed population regions did not approve the state revival policy, they do not remember to have been under pressure to change their attitudes and beliefs.

These results are to be expected having in mind the controversial event – the ethnic Turks suffered from it, while the ethnic Bulgarians were mainly witnesses or to be more precise, they suffered from it to a much less extent. However, one’s social orientations were revealed as another factor influencing the memories of the controversial event independently of ethnicity factor. As the results presented above indicate, the people having different social orientations – individualistic vs. collectivistic - have different memories. The individualistic orientation is related to significantly more memories of event details as well as to more memories of being different from other people, having

different beliefs and values and being under a social pressure to change the latter; while the collectivistic orientation is found to be rather related to more memories of sharing information and experienced emotions with relatives and friends. It is also related to more memories of a flashbulb type, i.e. memories of the event details as well as of the details of the context in which it happened. This distinction in the memories' content corresponds quite strictly to the definition of individualistic and collectivistic orientation, which essence is independence/dependence from the social context. What seems to be most intriguing however is that this effect appears independently of the impact of the ethnicity factor or in other words, independently of their ethnic origin, individualists and collectivists have diverging memories of the controversial event.

As a whole, the results of the study reveal that the memories of a controversial social event could depend on quite different indicators of cultural diversity. On one hand, there is conclusive evidence that traditional indicators, such as ethnicity, maternal language, and religion, influence the kind of memories people have about controversial events. On the other hand, the present research findings provide empirical evidence supporting the idea that the list of traditional indicators of diversity could be enriched if taking into account the social orientations as another factor differentiating people. Thus, more profound understanding of cognitive functioning could be achieved when the process of memorization and remembering is interpreted in terms of the concept of diversity.

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