

REACTIONS TO TRAUMATIC EVENTS: CHARACTERISTICS OF COMMUNICATION ENSUING THE RED SLUDGE DISASTER IN HUNGARY, OCTOBER 2010



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ABSTRACT

Our study analyzes the communication, the cognitive knowledge and the emotional responses related to the red sludge disaster in Hungary, in October 2010. We have studied the written answers to structured and open questions of 610 interviewees from four different towns other than the scene of the catastrophe. The research covered the first month following the event.

We found that geographical distances and gender differences affected the responses. Women displayed higher emotional responses; presumably they need a bigger social support in coping with traumatic events of the community. One month after the disaster there was still a relatively lively communication and interest concerning the event. Media comments relating to the disaster in the same period of time were constantly and considerably decreasing. Patterns of media narration represent and may as well influence the processing of the event in the community.

Results of the research may add to the better understanding of the nature of processing traumatic events in the community; they may serve as signposts to the implementation of

psychological intervention; and they may as well help to understand the complex nature of media effects.

A year after of the tragedy two memorials were dedicated to the victims of the disaster in Kolontár and Devecser. Both settlements had been affected by the disaster, and their inhabitants suffered the immediate consequences of the devastation. Speakers of the first anniversary commemorated the tragedy by recalling the process of the common elaboration on the collective tragic event. We have intended to follow the cognitive and emotional dynamics of the communication concerning the disaster in our sample in the first month of a supposedly long process at the end of which a collective traumatic event is becoming part of the national memory.

Keywords: red sludge disaster, traumatic events of the community, communication of disasters, coping strategies.

1. INTRODUCTION

A certain amount of people (20-30%) cannot process a traumatic event at all, however, they share as much as 95% of their experiences on the very day of the event. In certain cases the exchange about the traumatic event can lead to the suspense of the emotional stress, that is, to a constant pondering over the event. Nowadays disturbing events are often broadcast in the media. As a consequence of globalization of news they have their effects regardless of geographical distances. Physical closeness or personal involvement may enhance reactions to traumatic events. They turn into narratives whose emotional elements affect their communicational needs. The increased communicational need is a natural consequence of experiencing events of social stress.

In certain cases traumatic events may become part of the collective memory. If, for example, there is a loss related to public figures or values they may even become a part of the national memory. Natural and industrial disasters, due to their shocking nature count as slings, and the dynamics of the time needed for their processing can well be detected.

How a traumatic event, which is not of historic or political significance becomes a part of the national memory is a question of debate. Our research analyzes the reactions in the first month following an industrial disaster that got in the focus of the national and international media. We are aiming at finding out about how it is going to become a part of the national memory. We understand that the question of responsibility and the processes of rescue operations, psychological rehabilitation represent a social issue and are not without political considerations. The rescue operations of government organizations and NGOs can be considered a serious national issue.

The international media is attaching a national character to the event and calls it an "Hungarian" disaster, comparing it to other international events. We have intended to follow the cognitive and emotional dynamics of the communication concerning the disaster in our sample in the first month of a supposedly long process at the end of which a collective traumatic event is becoming part of the national memory.

Public remembrance of the first anniversary seems to support the feasibility of the red sludge disaster becoming a site –both physically and spiritually– of the national memory.

A possible way of processing individual traumatic events is emotional writing, which means writing about emotions constantly for a period of time, possibly without critical considerations. Writing of this kind, perhaps as a diary, might have a therapeutic effect (Niederhopffer & Pennebaker, 2005).

The media is focusing on the representation of serious events, the process of finding meaning, and the stages of the coping process. The method of the collective processing of the disaster affects the health and mental conditions of those most directly involved in the disaster (Gorter & Pennebaker, 2003).

Hungary had its largest industrial disaster when a red sludge reservoir of the Hungarian aluminium company (MAL Co. Ltd.) leaked, and flooded its immediate surroundings on 4th October 2010. The reservoir, owned by MAL Co. Ltd., is in an area between Ajka and Kolontár, and it is 300x500 m in size. The red sludge which leaked during the disaster (appr. 600-700,000 m³) flooded the lower parts of three settlements, Kolontár, Devecser and Somlóvásárhely. The alkalic, highly corrosive industrial waste material spread over 40 square kms causing a huge economic and ecological disaster in the region of Ajka. Ten lives were lost and injuries were over 150. All living creatures of two small rivulets (Torna and Marcal) were also killed by the alkalic waste material.

2. CONTEXT AND RESEARCH LITERATURE

2.1 Social periods of reaction to disaster

An increased communicational need is a natural consequence of experiencing events of social stress. The number of self-reports and exchanges concerning the self-reports became exceptionally frequent in the first two weeks following the earthquake in San Francisco (1989), and the start of the Gulf War (1991) (Pennebaker & Harber, 1993). Writing and the exchange about writing facilitate the creation of interpretation, and the shaping and processing of emotions concerning the event (Niederhopffer & Pennebaker, 2005). The repetitive process establishes remembering in the future, and the traumatic events turn into digestible memories in the future.

In the research literature of traumatic experiences three social stages relating to disasters and wars have so far been identified.

At the beginning of the *emergency stage*, in the first two or three weeks interviewees very often think or talk about the event. This is the time of social bonding when people engage in exchanges and talking with neighbours and strangers in an unusual way. This intensified need for communication is similar to the experience of people who have lost a beloved relative.

The *inhibition stage* starts two-three months after the event, and lasts for a few months. In this stage individuals gradually reduce exchanges relating to the event, however, they still keep thinking about it. They might be ready to tell others their own stories, however, they are no longer able to digest those of others'.

The *adaptation stage* is an unstable one indicating that people are continuing their lives. Authors are supposing that a number of additional processes are going on in this stage that will unfold months or years later. This is an uncertain model, which is based on research on a relatively short period of a powerful event of upheaval when the infrastructure was not considerably damaged.

Physical syndromes that might appear after the traumatic events are reported in the *inhibition stage* rather than in the *emergency stage* or the *adaptation stage* (Pennebaker & Harber, 1993).

An article of broader analysis on this topic has already been published (Pék, 2010).

2.2 The role of the media in the social coping process

The media is an important field for the treatment of traumatic events. Articles of the printed or the electronic media – especially a medium that represents the given community – become the narratives of the social experience of the community. Newspapers, like mirrors, reflect the processing of the tragic event in society. This way these events become more acceptable for society on both individual and cultural level.

Analyses of articles about disasters show that the articles reflect social and psychological processes going on in society. They serve as the providers of scripts to traumatic events. They provide a basis for social processes in finding and providing meaning. Within the frameworks of journalism they represent social narratives, and journalistic objectivity in finding and providing meaning helps communities to find control over the traumatic event. News and commentaries may help communities to process the tragedy. They also represent the emotions of the community, and the intention to understand consequences. Media criticism refers to the fact that the process the media is commenting on from the communication of the trauma is actually parallel with the stages of coping.

It is also presumable that the trauma shared by so many might influence the stress level of the whole community and their physical health throughout the whole coping process (Gortner & Pennebaker, 2003).

3. AIMS

In our research we are focussing on analyzing emotional reactions and cognitive narratives caused by the red sludge disaster, and its communication in the media. The first month of reactions to public events following disasters is always highly important as the first weeks count as the emergency stage which is characterized by an extra need for communication and an abundance of emotions.

Another aspect of research was to follow on-line contents of the media in the same period of time. Media on-line contents, of course, have their own dynamics different from other segments of the media.

We were also aiming at identifying and analyzing characteristics of emotional reactions relating to the disaster. Similarly, we were trying to grasp regional differences representing the four localities of our interviews.

4. HYPOTHESES

- 4.1 We were supposing that emotional reactions, communicational needs and intentions had an inverse relationship to geographical distance.
- 4.2 We were also supposing that the communication of the disaster would display a similar progression to the ones reported in the international research literature. Our research period covered the first month including the "emergency stage," thus we were supposing a growing frequency in the beginning and a falling frequency of communication at the end of the period.
- 4.3 As regards media on-line contents, we presumed that they would display a similar progression, that is, we were expecting similar dynamics among the fields observed.
- 4.4 As for emotional reactions, we were expecting gender differences in both contents and intensity. We were supposing that women would report more emotionally negative reactions.

5. MATERIAL AND METHOD

Our questionnaires, specially developed for this purpose, were recorded in the first 33 days following the disaster. We recorded them with 613 interviewees, mainly students. The localities were Sopron, Budapest, Debrecen and Nyíregyháza. 90% of interviewees were students of universities and colleges. The questionnaire had two parts: the *first*, beside a statistical heading (age, sex, date of completion) had two open questions referring to the emotional reactions and cognitive knowledge of the person. The *second* had closed questions referring to the frequency of communication and the need of communication about the disaster in the past 24 hours.

We used the method of content analysis and based our analysis on the Regressive Imagery Dictionary (RID; Martindale, 1969). The Hungarian version of RID, which is based on the psychoanalytic theory has been developed by Gergely Szabó in 2010. The dictionary can be applied to the analysis of altered states of consciousness (Martindale & Martindale, 1988). The translated versions of RID have been successfully applied in psychoanalytic research, as for example in the content analysis of first interviews (Frommer et al., 2005). The theory of RID postulates that special changes of consciousness produce special language representations.

The Kruskal-Wallis test and the Mann-Whitney U test were applied for processing statistical data.

6. RESULTS

6.1 The role of the geographical distance

In processing the data we used the Kruskal-Wallis test to learn about the differences among eight variables in the samples of the four localities. The eight variables were the answers to the following questions: how many times they talked about the disaster to others (1), to one person (2), in company (3); how many times they thought about it (4); how many times they heard others talking about the disaster in the media (5); how many times they heard others

talking about the disaster out of the media (6); how many times they would have liked to hear news about the disaster (7); how many times they would have liked to talk about the disaster (8). All questions were referring to the 24 hours prior to the interview.

Four out of the eight variables showed significant differences concerning the localities of the research.

- a) In the past 24 hours, how many times did you talk to others about the disaster?, or did you share your knowledge, your opinion or your emotions about the disaster? (1)
- b) In the past 24 hours, how many times did you talk to one person about the disaster? (2)
- c) In the past 24 hours, how many times did you talk about the disaster in company (at least 2 people)? (3)
- d) In the past 24 hours, how many times did you think about the disaster without talking to others? (4)

Results:

- a) There are significant differences among the localities of the survey in the number of times interviewees (N=610) were talking to others about the disaster.

In Nyíregyháza interviewees talked to someone the least often; then in Budapest, and then in Debrecen. Interviewees in Sopron reported the highest number of occasions they talked to someone about the disaster (the result is statistically significant; significance: $p < 0.000$; chart 1).

The Kruskal-Wallis test was applied.

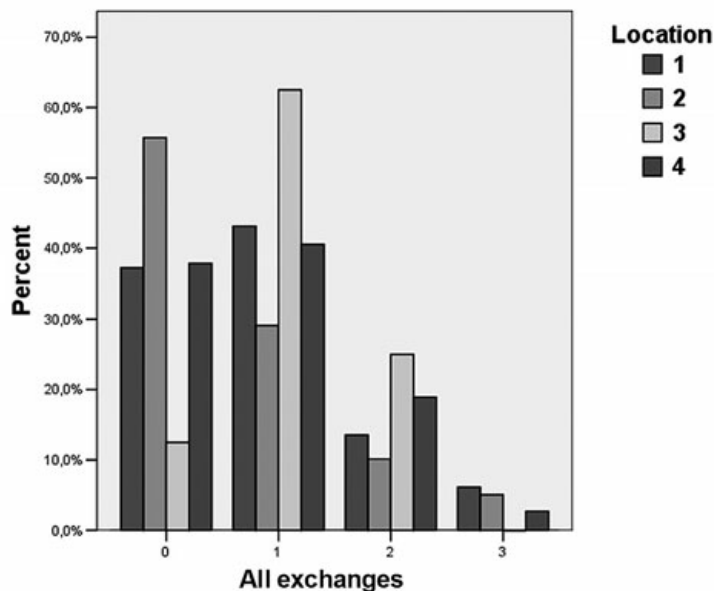


Figure 1.

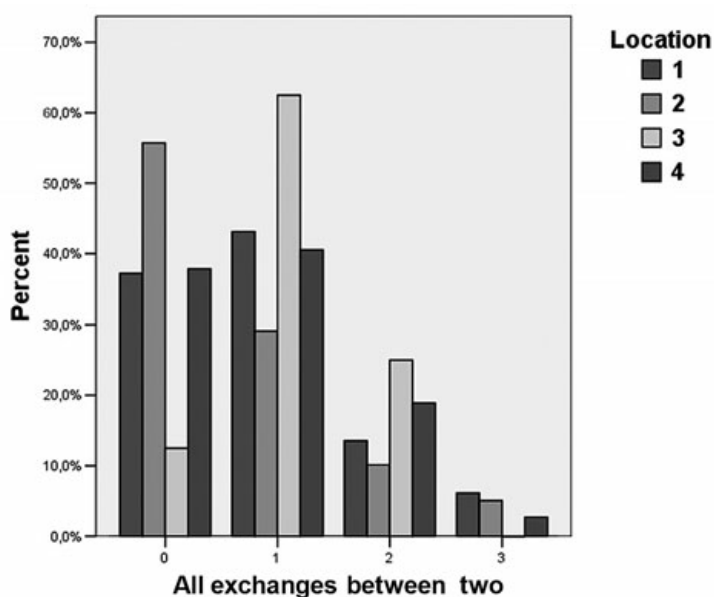


Figure 2.

How many times interviewees talked about the disaster in four cities (Debrecen 1, Nyíregyháza 2, Sopron 3, Budapest 4)

b) There is a significant difference in the number of occasions interviewees (N=610) talked to one particular person about the disaster.

In Nyíregyháza interviewees talked to the fewest number of people; the second fewest was in Debrecen, and then in Budapest, and in Sopron interviewees had the highest number of people they talked to about the disaster (the result is statistically significant; significance: $p=0,015$) (Figure 2.)

The Kruskal-Wallis test was applied.

c) There are significant differences among the cities in the number of times interviewees (N=610) talked to others in a group about the disaster.

(Nyíregyháza < Budapest < Debrecen < Sopron)

($p=0.076$; Figure 3.).

The Kruskal-Wallis test was applied.

d/ There are significant differences among the cities in the number of times interviewees (N=610) thought of the disaster.

Interviewees in Sopron thought of the disaster most often, less often in Debrecen, then in Budapest, and least often interviewees in Nyíregyháza thought of the disaster.

($p=0.003$; Figure 4).

The Kruskal-Wallis test was applied.

How many times interviewees in the four cities were thinking about the disaster (Debrecen 1, Nyíregyháza 2, Sopron 3, Budapest 4)

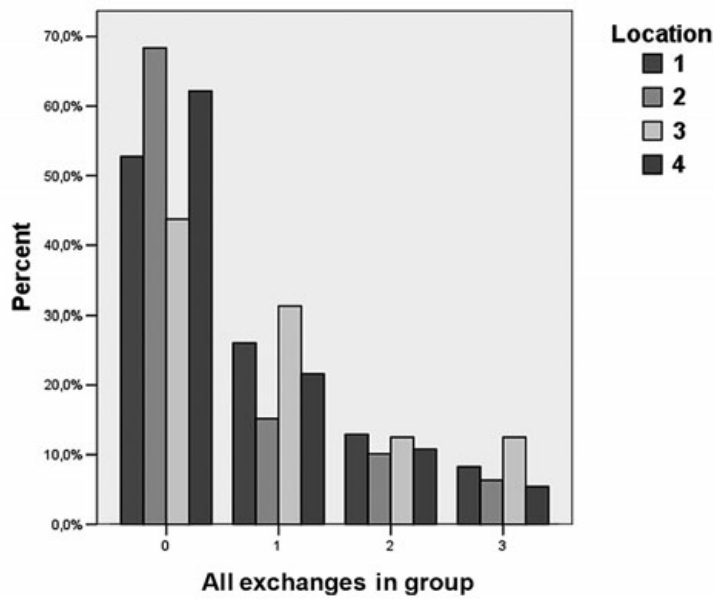


Figure 3.

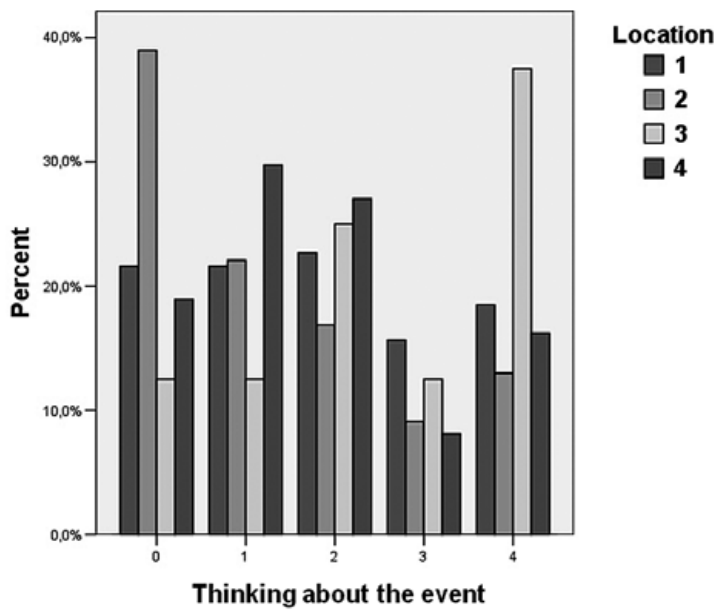


Figure 4.

6.2 Changes in time

We observed how interviewee answers changed in time. There is a similar progression in time among the eight variables: there are higher activities on the eleventh day and between the 15th and the 17th days (they talk more, and they think more about of the disaster on these days).

Two weeks after the disaster there is an ebb in communication, and then a rolling follows with ups and downs there is a rise, and then, even after two months there is a frequency similar to that of the beginning of the second week. As the progression is similar, results are displayed in one chart together with the results of the "talk in company" question. (Figure 5.)

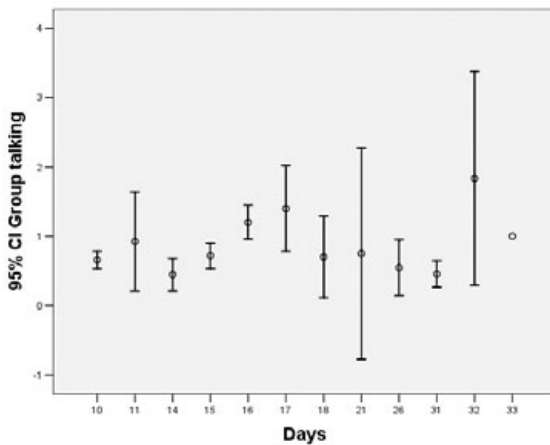


Figure 5.

6.3. On-line contents

6.3.1. The frequency of on-line news

To follow the frequency of daily news on the disaster for one month the Google internet search system was used. After 16 days the frequency of written news fell under ten per day, that is, from that time on the frequency of written news fell under a fourth of the first days. After a month the figure fell less than five per day (Figure 6.).

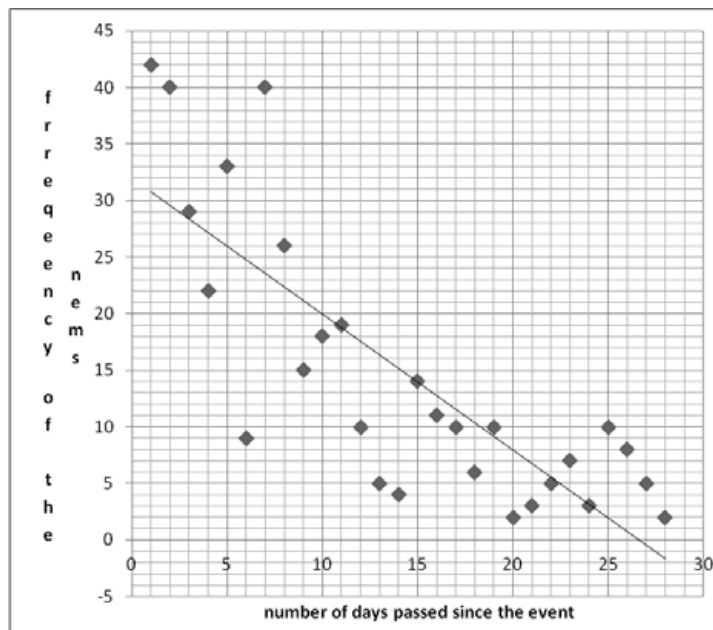


Figure 6.

6.3.2. The frequency of online videos

To follow the dynamics of uploading videos we also used the Google search system (Figure 7.)

A similar dynamics to written news is observable: after Day 18 uploading is under ten per day, whereas in the first week it was more than its double. After a month the figure falls under five.

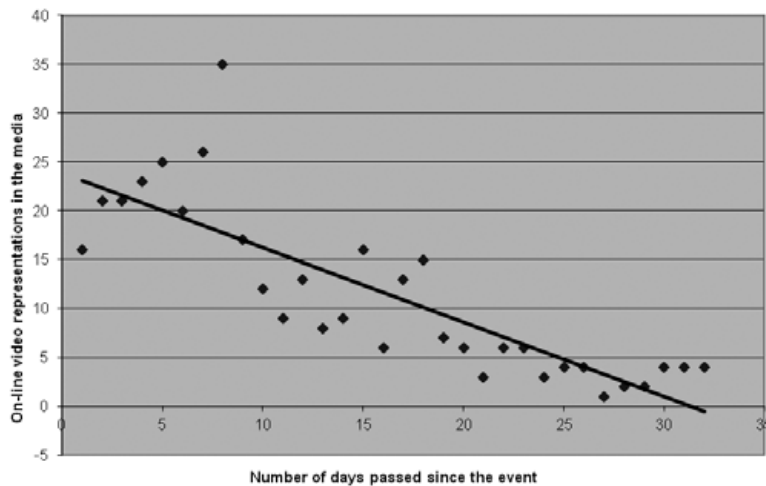


Figure 7.

6.4. Results of content analysis

We applied content analysis to the answers to two open questions: "What do you know about the red sludge disaster?" and "What emotions have you got in connection with the disaster?"

6.4.1. Results of three categories of content analysis

We observed three categories: emotions, symbols of defence, and regressive thinking.

Of the three categories two had statistically significant differences: emotions and symbols of defence ($p < 0,000$; $p = 0,0060$).

Women apply more emotional categories, and use more words that belong to defensive symbols in their answers (Figures 8. 9.).

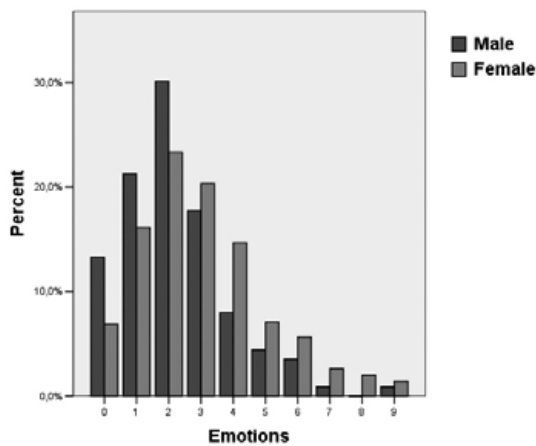


Figure 8.

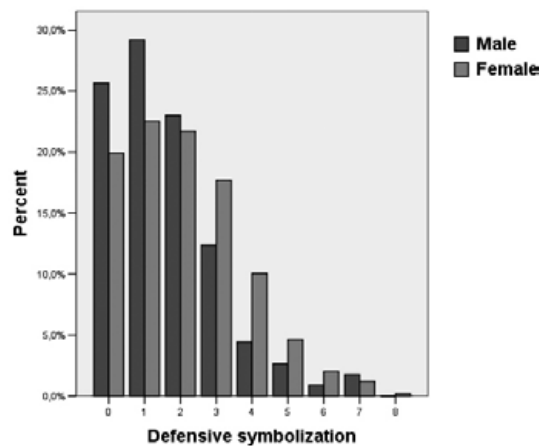


Figure 9.

6.4.2. The investigation of the three content analysis categories by their subtypes

The following subtypes have been investigated in the three categories:

- a) Emotional subtype: aggression, fame, expressive behaviour, positive emotions, love, sadness, anxiety.

- b) The subtype of defensive symbols: diffusion, chaos, passivity, voyage, accidental movement.
 c) The subtype of regressive thinking: crossing, timelessness, unknown, concrete, narcissism, changes of consciousness.

Results

a) There is a significant difference between men and women in the aspects of sadness and anxiety. Women use more words that belong to sadness and anxiety in their answers ($p=0,001$, $Z= -3,323$; $p<0,000$, $Z=-4,080$) (Figure 10.)

We applied the Mann-Whitney U test.

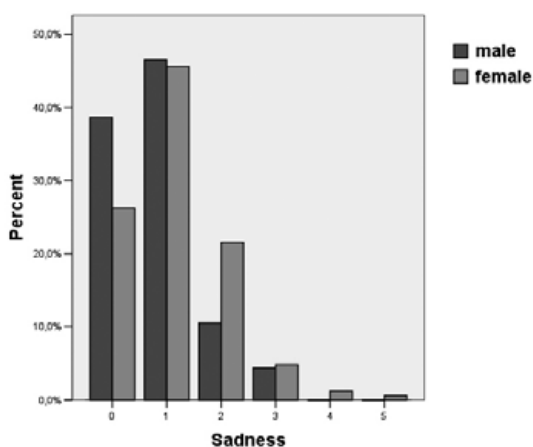


Figure 10.

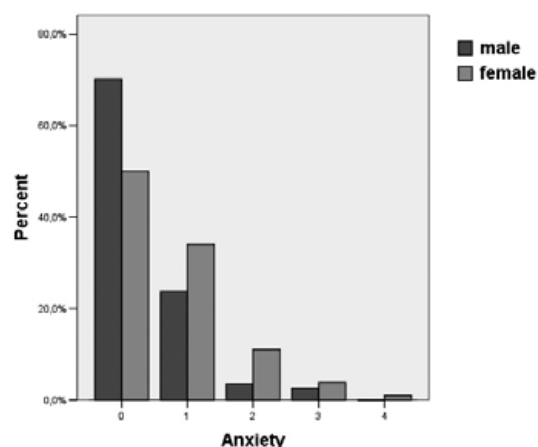


Figure 11.

A significant difference in the chaos aspect of the defensive symbols is observable between men and women. Women use more words that can be associated with chaos. ($p=0,022$, $Z=-2,295$) (Figure 12.)

The Mann-Whitney U test was applied.

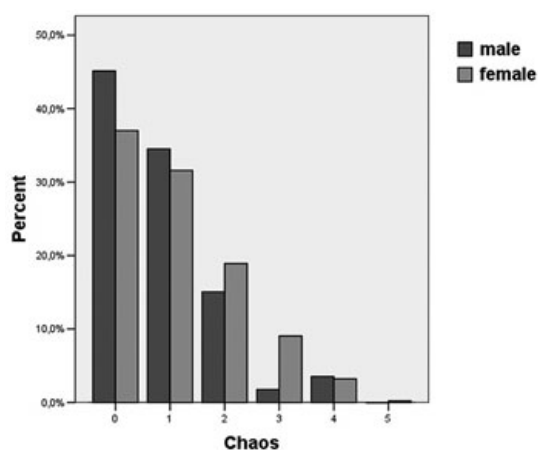


Figure 12.

b) There were no significant differences in the aspects of regressive thinking.

6.4.3. Aspects of time and gender in the cognitive and emotional reactions

We observed answers to "What do you know about the red sludge disaster?" and "What emotions have you got in connection with the disaster?" We wanted to learn about the willingness of the interviewees, and how their attitudes change over time.

The Mann-Whitney U test was applied.

We considered the answers to the above two open questions as indicators of willingness to answer.

a) The two categories showed similar progression in time: the two peaks of the curve are around Day 11 and Days 17 and 18. (Figures 13. and 14.)

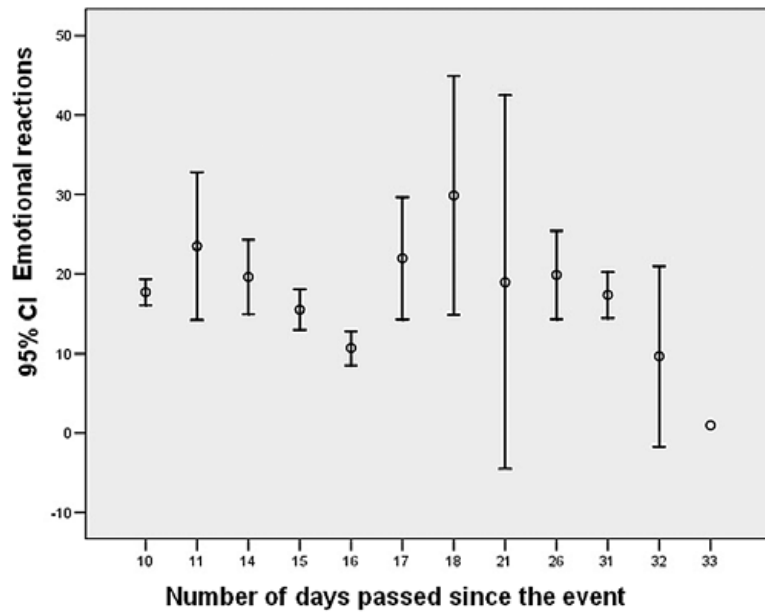


Figure 13.

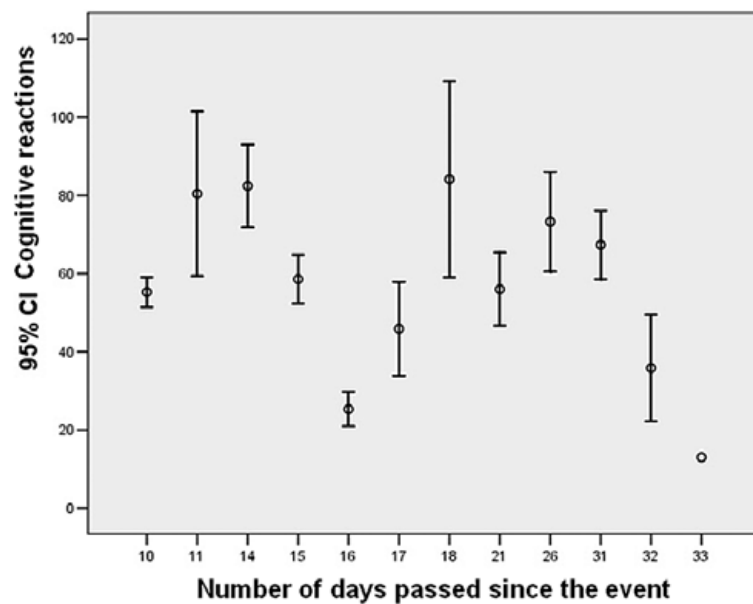


Figure 14.

Cognitive and emotional aspects were contrasted by gender, and significant differences were found between the answers of the different sexes. Women used more words than men in both answers ($p < 0,000$, $Z = -3,904$; $p = 0,026$, $Z = 2,222$).

The Kruskal-Wallis test was applied.

7. CONCLUSIONS

We concluded by confronting our results with our hypotheses.

7.1 The effect of distances

Our hypothesis concerning the inverse proportion between the geographical distance and the communication relating to the disaster and the frequency of thinking about it has been approved. The strongest marked difference has been registered between the closest and the farthest scenes of the survey regarding the frequency of exchange about the disaster with one person or in a company. The closer to the scene of the disaster an interviewee lived the more motivated he/she was to engage in an exchange or to think about the disaster.

7.2 Communication and thinking about the disaster

The fact that the communication about the disaster started decreasing after two weeks met our expectations drawn from the conclusions regarding disaster time dynamics in the international literature. What surprised us was the fact that even after four weeks interest in the disaster did not remarkably decrease. It did not fall below the level of the 10th day, sometimes it even increased. Interest in the trauma did not decrease within one month in this research. It seems the stage of inhibition, which is preceded by a sudden fall of interest, came about later in this case. In the inhibition stage, contrary to the previous stage, communication about the disaster is intentionally avoided. Our results indicate that the processing of this tragedy may have happened more slowly in our research population.

7.3 The dynamics of time in the on-line media

Interestingly, interviewees' attention to all contents of the media had a different pattern in time than the lap of national occurrences of the written and visual contents in the on-line media. The individual daily averages of interest sometimes even exceeded the values of those of four weeks earlier.

The national on-line representation of the event was constantly decreasing, and this pattern of the dynamics of time seems to fall in line with the results of the research on the processing of traumatic events.

7.4 Gender differences in cognitive and emotional reactions

Women's emotional reactions exceeded men's quantitatively, and (the) content analysis indicated the overpowering presence of a defensive symbolism. Women used more words relating to sadness, anxiety, and chaos in their cognitive and emotional narratives about

traumatic events. This indicates that women, in their reactions to traumatic events, show more sensitivity to negative information, their narratives are fraught with negative emotions. Women possibly have an enhanced need for support, and in the emergency stage of the coping process this quality surfaces significantly.

8. DISCUSSION, PERSPECTIVES

In this study our sample – the majority of which was university students, mainly women – indicates a longer stage of emergency in their communication reactions and needs.

The members of this sample might have been more sensitive to the news of the red sludge disaster, which explains the intensity of their communication about the traumatic event even a month afterwards. The intensity of individual interest in the sample did not decrease markedly in the first month.

The intense, long lasting emotional reactions caused by a traumatic event of outstanding importance associated with national identity must have been of relevance for the members of our sample. However, interviewees were not directly affected by the event, they did not become victims. Nevertheless, reaction time patterns indicate a relatively long-term involvement.

The event of collective trauma is intertwined by larger quantities of negative feelings in women's reports. They probably need larger social support to their coping strategies, too.

In processing collective traumatic events the media, on the one hand, provides information, helps maintaining public interest and influences public communication about the event. On the other hand, media news help in searching and providing meaning, offer social narratives, thus they help the community to process the tragedy. Contents might represent the actual stage of the communal processing of the event.

We found a constant communication about the disaster more stable and longer lasting than the patterns of individual communication, not waning even one month after the event. The contents of the two types of on-line media – verbal and visual – showed a faster decrease in time. The segments of the media we observed were considered representative on national level, too. The constant and stable interest registered on the level of the individual – our results suggest – is not a consequence of quantitative media representation. The nature of the trauma, the seriousness of the case, the question of responsibility, the difficulties of rescue operations and mental rehabilitation might all have become factors of this issue. Physical distance has also played a part overwriting the globalizing effect of the news processing potential of the media. The red sludge disaster received considerable covering in the international media, too, but its international discussion and presentation was beyond the scope of the present research.

A continuation of the present research is a repeated survey after one year, which would deal with the characteristics of the so-called adaptation stage. This stage – which has been rarely studied – is usually characterized by a lack of inhibition and by the return of less extreme and more balanced emotional reactions concerning the disaster. Our plan is to study the cognitive knowledge about the event a year before, as well as the remapping of the actual

emotional reactions of the members of the present sample and those of others'. The present research is to be extended in a way that the type of the media through which the latest pieces of information about the disaster are conveyed to the interviewee would be included. Our research should also include other internationally renowned disasters, too. A structured questionnaire based on the results of the present study which would focus on the mapping of emotional representations would be developed and applied. The same questionnaire is planned to be applied to a sample of high-school students and adults, whereas the present study is using a sample of mainly university students.

We understand our survey was also an act of intervention into processing and coping strategies. In Debrecen and Nyíregyháza sampling was continuous, which might have influenced the attention of interviewees as they were aware of being surveyed. The written answers to the two open questions about participants' knowledge and emotional reactions offered them a kind of emotional writing, which, in itself, is an important way of processing traumatic events. We also plan to apply emotional writing among the victims of the red sludge disaster to help coping with difficulties and to reduce psychological and somatic consequences.

Our survey covers the first month of the collective processing of the disaster.

The question when a significant traumatic event with full-scale media publicity becomes part of the national memory needs further consideration. Our results facilitate further research questions and directions in the future. A relevant area might be to observe the characteristics of national, generational, political, geographical, and other environmental factors that affect the coping management of the community.

The results of our research may add to a better understanding of the nature of processing traumatic events in the community; they may serve as signposts to the implementation of psychological intervention; and they may as well help to understand the complex nature of media effects.

A year after of the tragedy two memorials were dedicated to the victims of the disaster in Kolontár and Devecser. Both settlements had been affected by the disaster, and their inhabitants suffered the immediate consequences of the devastation. Speakers of the first anniversary commemorated the tragedy by recalling the process of the common elaboration on the collective tragic event. Hungarian society has made unprecedented efforts at different levels, from the volunteers for the redevelopment of the environment to the organizational and managerial efforts of the local and central government.

We have intended to follow the cognitive and emotional dynamics of the communication concerning the disaster in our sample in the first month of a supposedly long process at the end of which a collective traumatic event is becoming part of the national memory.

Public remembrance of the first anniversary seems to support the feasibility of the red sludge disaster becoming a site – both physically and spiritually – of the national memory. A further survey is planned to be carried out on the different representations of these memorials for the purpose of a better understanding of the complexity of the collective elaboration of the red sludge disaster.

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