

## Original Papers

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### Positive consequences of the experience of disaster

*Wroclaw and Opole were the two biggest Polish cities afflicted by the huge flood of 1997. Research conducted 9 months and 3 years after this disaster (Wroclaw and Opole, respectively), compares the opinions of people who lived in (a) flooded areas, (b) places threatened with flooding which avoided the calamity thanks to inhabitants and rescue teams' heroic struggle, and (c) areas under no threat of flooding due to their location. The research analyzed whether the place of residence influenced perceptions of varied advantages which research participants could perceive as consequences of the flood. Quite surprisingly, it turned out that the perception of interpersonal relations was better in places where the inhabitants struggled against the disaster than in those not threatened by the flood.*

**Keywords:** stress, disaster, trauma, optimism

Thoughts about the flood and its real or potential victims usually concentrate on negative results, material and emotional losses and the erosion of social ties. It is commonly assumed that the threat of disaster can cause chronic psychopathological consequences for an individual and can be a reason for the deterioration of interpersonal relations and a considerable fall in possibilities of supplied and obtained social support (Kaniasty, Norris, 1993, Marsee, 2008, Verger et al., 2003). The most obvious and perhaps the best described result of individual involvement in natural disasters is post-traumatic stress disorder which comes out through going back to traumatic situations in nightmares; reliving them in memories and moments of reflection, emotional trance, indifference to everyday duties; irritability and a reduction in good mood (Freedy, Klipatrick and Resnick, 1993; Phifer and Norris, 1989; Tuicomepee and Romano, 2008).

However the dramatic results of a natural disaster concern not only individuals but also local communities. The spontaneous mobilization, collective defense of belongings, disinterested reciprocal help and support for each other in the face of danger unite people only in times of disaster. This type of behavior, characteristic of the time of struggling against disaster can be defined as "phase of heroism" or "period of altruistic community". A therapeutic community generated at the time of common action is distinguished by a sense of solidarity and strong integration, it gives help and support to its members, later,

in the face of disaster, this great behavior is gradually replaced by mutual resentment and the disappearance of solidarity. Unequal division of material goods and different levels of support using formally given help inevitably lead to erosion of social relations. The time of "heroic community" lasts shorter than the long-term effects of disaster which contributes to deterioration of possibility for support given to members of local communities touched by disaster, and to erosion of social relations (Kaniasty, 2001; Norris and Kaniasty, 1996; Rubonis and Brickman, 1991).

The view of a catastrophe from the perspective of advantages or lack of them, is a separate issue. The ability to notice advantages in traumatic events is one of the most interesting parts of research into the stress and strategies of dealing with difficult situations (Tedeshi and Calhoun, 1996, Park et al., 1996). Seeing advantages in experienced trauma is one of the factors facilitating adaptation and is positively correlated with the length of life in the case of cardiological patients after heart attack (Affleck et al., 1987). The ability to notice advantages in traumatic experiences is often observed in case of victims of natural, criminal and industrial disasters regardless of their kind, both directly after the fact (4 to 6 weeks after a catastrophe) and 3 years after it. The noticed advantages concern change of life strategies and values, as well as material profits. Furthermore, it was proven that seeing the advantages of involvement in this sort of events can contribute to improving the mental functioning of victims of disaster,

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and be conducive to receding the psychopathological symptoms which are a consequence of involvement in a catastrophe (McMillen et al., 1997).

The development of an altruistic community supporting their members could also be treated by victims of the disaster as one of possible advantages. This is probable because perceiving negative events as unexpected profits is standard procedure for victims of critical situations (Sęk, 1993).

The ability to notice advantages should be treated as possible better adaptation to such situations and, what is more, a strategy in overcoming negative consequences of stress and counteracting psychopathological disturbances. So far I have not found any analysis of interpersonal advantages as a result of collective traumatic experience in literature of the subject. Hence, empirical exploration into this issue was decided on by analyzing the social consequences of the disaster which affected two cities in the South-West of Poland in the summer of 1997: Wrocław (660,000 citizens) and Opole (120,000 citizens).

The first study concerned Wrocław's inhabitants and was carried out nine months after the catastrophe, in April 1998.

## STUDY 1

Individual districts of Wrocław struggled against the flood more or less effectively. Some parts of the outskirts and residential areas were flooded regardless of their inhabitants' involvement; others avoided such fate thanks to fortune. The parts of the city located a bit higher was neither destroyed nor threatened by the flood. The collective efforts of local community members throughout the struggle against disaster ended with either success or failure. In examining this, one ventures to determine the role that the fight with disaster itself and its results played in the perception of social ties and noticed social support.

### Method

Altogether 140 people were interviewed. They were residents of three residential areas in Wrocław:

- the Zacisze district, flooded by the Odra river (55 people)
- the Soltysowice district, threatened by the flood but not flooded (54 people)
- the Oltaszyn district, not threatened by the flood and not destroyed (31 people)

The choice of place was made due to similar character of areas, their comparable sizes, style of architecture, population, and so on. The Zacisze and Soltysowice districts are located adequately nearby embankments built along the Odra and Widawa rivers. During the flood residents of both

areas were directly and actively involved in the work of making the embankments stronger and higher and in turn led to the creation of conditions that generated therapeutic communities of the heroic phase. Cracks and leaks in the embankments were the direct reason for flooding of the Zacisze district (the level of the water that flooded estate reached 2 meters in some parts, and remained for a couple of days). The Soltysowice district, in spite of similar threats, was not flooded. Residents of the Oltaszyn district were not involved in the collective work of protecting their area against the disaster as this area was not threatened by flooding because of its location.

Place of residence was the independent variable. Age and sex of the research participants were also controlled. They were asked to give a short interview and fill in some scales.

### Scales used in the studies

In the research a questionnaire was applied (authorship of Kaniasty and Norris) and adapted to Polish conditions. In this questionnaire individual scales are separated and measured with the help of 4 to 15 items. In the Polish version the scales mentioned above have full satisfactory parameters in two cases (noticed social support—Cronbach's  $\alpha=.74$ ; and noticed change of social support— $\alpha=.89$ ), and in two others the parameters are not fully satisfactory (satisfaction with neighbors' help:  $\alpha=.62$  and sense of membership:  $\alpha=.63$ ).

Besides noticing that the research participants had some perception of the possible advantages after the flood, a simple method of measurement was worked out. This was conducted on the basis of assumptions accepted by McMillen and others (1997). At the beginning the research participants were asked to answer the question "whether they were able to think of something good that happened to them which was a result of the flood". In case of a positive answer they were asked for an exact definition of the advantages and the given explanation was attributed to one of the six following categories: increase in people's closeness; changes in personality; local community's integration; changes in one's own effectiveness; material profits; and "other".

### Results

There were no statistically significant effects using a set of MANOVA analysis for the place of residence as the independent variable and noticed support, satisfaction with neighbors' help and sense of membership as vectors of dependent variables. However, some answers to some questions of these scales appeared to be dependent on the place of residence.

There was diversity in the range of noticed support. Residents of the Zacisze district were more confident

about getting help in case of their own illness (1.35) than the residents of Soltysowice district (1.64);  $t=2.55$ ,  $p<.03$ . The difference between the residents of both these districts and the residents of the Oltaszyn district (1.42) was not significant. Opinions about the person who could take care of the respondent's flat in case of his/her longer absence appeared to differentiate according to the place of residence. The residents of the Zacisze (1.37) and Soltysowice (1.34) districts relied on their neighbors support more frequently than the residents of the Oltaszyn district (1.67);  $t=2.43$ ,  $p<.02$  to compare: Zacisze – Oltaszyn  $t=2.81$ ,  $p<.01$ ; to compare: Soltysowice – Oltaszyn. The other statistically significant effects for the factor of noticed support were not shown.

In the range of satisfaction with neighbors' help –the residents of the Oltaszyn district were more confident that their neighbors' possible advice would be satisfactory for them (3.06) than the residents of Zacisze district (2.59);  $t=2.64$ ,  $p<.01$ . In this respect there were no differences between the residents of Soltysowice and the research participants from the two other districts. Similarly, in Oltaszyn favorite neighbors swung towards an assumption that they were a higher degree of friend (3.00) than the situation between neighbors in the Zacisze district (2.38);  $t=2.68$ ,  $p<.01$  and neighbors in the Soltysowice district (2.53);  $t=2.22$ ,  $p<.03$ .

In the sense of membership range, the residents of the Oltaszyn district (1.64) were more confident that they would easily find a neighbor to spend a nice Friday afternoon with than the residents of Zacisze (1.42);  $t=1.92$ ,  $p<.06$ , and Soltysowice (1.40);  $t=2.20$ ,  $p<.03$  districts. Similarly, the research participants from the Oltaszyn district were more convinced that they were able to find a neighbor to talk to when they felt lonely (1.94), than the residents of the Zacisze (1.72);  $t=2.36$ ,  $p<.02$ , and Soltysowice (1.79);  $t=1.87$ ,  $p<.07$  districts.

In light of the conducted MANOVA analysis, the intensity of noticed support proved to be dependent neither on the place of residence (Rao's  $R=1.25$ , n.s.) nor the age of the research participants (Rao's  $R=.93$ , n.s.). The interaction of those factors also had no influence on the intensity of noticed support (Rao's  $R=.81$ , n.s.). In comparison with the situation before the flood the noticed change of social support appeared not to be dependent on the age of the research participants ( $F=1.96$ ,  $p<.11$ ). The influence of the place of residence on the change of noticed support proved to be close to a statistically significant level ( $F=2.51$ ,  $p<.09$ ). The interaction of the above mentioned factors was not statistically significant ( $F=1.38$ ). Closer analysis shows that the noticed change of support is bigger in the areas affected by the flood (+1.33) than in the Oltaszyn, the district not threatened or destroyed by it (+.33);  $F=3.91$ ,  $p<.05$ . The noticed change of support is however, almost identical in the flooded areas (+1.30) and in the areas where

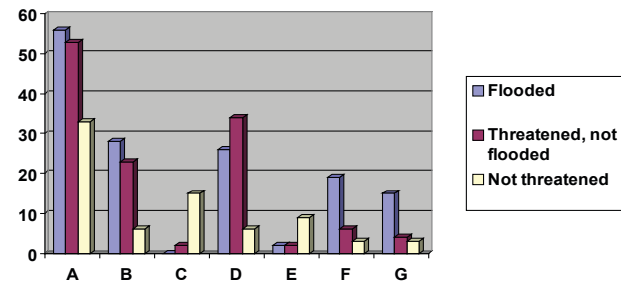


Figure 1. Study 1. Perception of different profits in Wroclaw nine months after the flood disaster.

A – Any profits  
 B – People's closeness  
 C – Desirable changes in one's own personality  
 D – Integration of local community  
 E – One's own effectiveness in dealing with problems at home and at work  
 F – Material profits  
 G – Other profits

people managed to protect themselves against the disaster (+1.38). The differences between the areas where people struggled against the disaster and those not threatened by the flood were especially expressive in acceptance of the statement ("Do you think you make up a community to a certain degree?");  $F=5.66$ ,  $p<.02$ .

It is interesting however, that while in the areas where people defeated the disaster (the Soltysowice district) it was noticed that social support increased slightly only during the flood, in the areas where the natural disaster defeated people (the Zacisze district) the time of change was placed mainly in the post-flood period (chi square=7.22,  $p<.008$ ).

The next group of results focuses on noticing the advantages. The first question was concerned with the issue as to whether the research participants could see any profits in the flood. It turned out that there was no difference in this range between the residents of both districts threatened by the flood (advantages were noticed by 56% of the residents of Zacisze and 53% of the residents of Soltysowice) and they could see advantages of this kind more often than the residents of the district not threatened by the flood (Oltaszyn -33%); chi square =4.40,  $p<.04$ . The differences in noticed advantages among the three analyzed places of residence correlated with individual aspects of this notion are illustrated in Figure 1.

According to Figure 1, in some cases, varying differences in the perception of advantages about the flood's consequences deviate from the pattern described above. As a matter of fact, none of the research participants noticed the post-flood changes in their own effectiveness in dealing with problems at home and at work. It caused a lack of significant differences in this range among research participants from the three districts of Wroclaw. As far as the noticed material profits are concerned, the residents of Zacisze whose area was destroyed by the flood recognize them more than those who managed to protect their district against the flood. (chi square =4.14,  $p<.05$ ) and by those,

whose district was not threatened by the flood (chi square =4.45,  $p<.04$ ). Similarly, the residents of the Zacisze district notice the advantages attributed to the category “other” (chi square adequately: 3.85  $p<.05$  and 3.07,  $p<.08$ ). However, the residents of Oltaszyn, the district not destroyed by the flood, saw more often than the residents of the two other districts that the advantages connected with the changes of their own personality were “for better”. –chi square=8.68,  $p<.001$  to compare Oltaszyn – Zacisze and chi square =5.51,  $p<.002$  to compare Oltaszyn – Soltysowice.

With respect to two other variables the results were consistent with the general pattern – the residents of both districts struggling against the flood were not different from each other in the range of noticed advantages and saw them more often than the residents of the district which did not experience the disaster. As regards the noticed increase in people’s closeness and the changes in noticed greater integration of the local community, the residents of districts touched by the flood were not different from each other. Yet those changes were noticed more often by the residents of Oltaszyn, the district not threatened by the flood. In the range of noticed increase in closeness to people they live among, chi square for the difference Zacisze – Oltaszyn was 6.14,  $p<.02$ ; and for the difference Soltysowice – Oltaszyn 4.10,  $p<.05$ . As far as the increase in local community’s integration is concerned, the chi square values were significant – for the difference Zacisze – Oltaszyn 5.39,  $p<.02$  and Soltysowice – Oltaszyn 8.87,  $p<0.01$ .

## Discussion

The results described above do not confirm the hypothesis of the deterioration of community that suffered because of the catastrophe. The residents of Zacisze district present a similar way of recognizing social relations and their opinions concerning the view of the society they belong to are very similar to the way of valuing social relations presented by the residents of Soltysowice district. It is puzzling because in both cases the change of social support is placed in different periods of time –the residents of Soltysowice noticed changes in the period of “heroism and altruism” (during the flood) while the respondents from Zacisze in the phase of “deterioration” (after the flood). What seems to be a surprising effect, is that the size of measurable losses experienced by the respondents is not a dividing line in the research participants’ existence (the difference between the residents of the flooded district and those not destroyed would be visible then). Of more concern is the noticed social support, as well as the residents perception of the advantages from the catastrophe. Most of the empirically confirmed dependences point to the difference between the respondents from the districts threatened by the flood (no matter whether the catastrophe

happened or was avoided) and those from the districts not threatened by it. Therefore, what seems to differentiate is either the common feeling of threat, or the situation of general mobilization and the generation of an “altruistic community”.

Unfortunately, there was no confirmation – at least in the light of the presented data – of the assumption that the residents of Soltysowice while protecting their district from the threat of flood would create a long-standing strongly integrated therapeutic community. This usually happens during the struggle against a natural disaster, though later it deteriorates, due to the influence of the consequences of disaster.

The group examined noticed the positive changes in social support, placing it in the period of flood, however at the same time the view of neighbors, the residents of Soltysowice, is definitely less favorable than in the cases of respondents from Oltaszyn and does not differ from the image of neighborly relations presented by the residents of Zacisze.

I decided to replicate the final results concerning noticed advantages of the disaster in Wroclaw in the other city influenced by the flood – Opole. Additionally, I decided to check whether the pattern of results presented above would be confirmed under such conditions when the residents’ opinions were collected over a longer period after the disaster. The research in Opole was carried out in 2000, three years after the flood.

## STUDY 2

### Methods and results

The research was conducted in the east area of Opole located directly near the Odra river (threatened but not flooded), in the east part of the city located far from the Odra river and a bit above river-level (not threatened with the flood), and in the west part of the city – flooded by the river. In the research the residents were asked, using the tools from the first study, about the advantages noticed by them of the experienced disaster. 40 adults from each of the three groups mentioned above were examined.

The first question was concerned with whether the research participants could see any advantages of the flood. It appeared that the residents of both districts threatened with the disaster did not differ from each other in this respect (advantages were noticed by 45% of residents of the destroyed areas and by 42% of residents from districts only threatened), but they saw more advantages of this kind more often than the inhabitants of areas not threatened with the flood (28%; chi square = 30.67,  $p<.001$ ). Figure 2 illustrates the differences among the three analyzed places of residence in noticing the advantages of



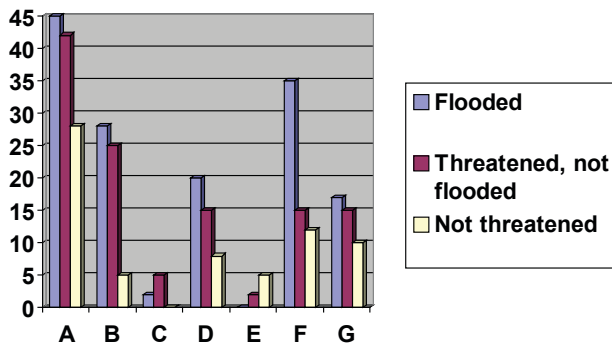


Figure 2. Study 1 - Perception of different profits in Opole three years after the flood disaster.

- A – Any profits
- B – People's closeness
- C – Desirable changes in one's own personality
- D – Integration of local community
- E – One's own effectiveness in dealing with problems at home and at work
- F – Material profits
- G – Other profits

the flood. According to Figure 2, in some cases, varying differences in the perception of advantages about the flood's consequences deviate from the pattern described above. As a matter of fact, almost none of the research participants noticed the post-flood changes in their own effectiveness in dealing with everyday problems at home and at work. It caused a lack of significant differences in this respect among the research participants from the three districts in Opole. The noticed changes in one's own personality were comparable in three researched ranges. As far as noticed material profits are concerned, the residents of the district destroyed by the flood recognize them more so than those who managed to protect their district against it (chi square = 10.00,  $p < .002$ ), and than those whose district was not threatened (chi square = 9.50,  $p < .002$ ).

As regards other factors, the results were consistent with the general pattern – the residents of both districts struggling against the flood were not different from each other with respect to noticed advantages and saw them more often than the residents of the district which did not experience the disaster. In the analysis presented below there are differences between both districts threatened by the flood on one side, and on the other the one not threatened by it.

With respect to noticed people's closeness, chi square for the difference mentioned was 15.33,  $p < .001$ , and as regards the increase of local community's integration: 7.33,  $p < .01$ .

## Discussion

In principle, the results of both sets of research carried out in Opole and earlier in Wrocław were the same. People who struggled against the flood showed more noticed

interpersonal advantages than the residents of districts not threatened with it. What is important here is that the residents from the threatened districts noticed the advantages in a very similar way, no matter whether they managed to avoid the flood or not. The result indicating that those from flooded areas see more material advantages than other research participants is completely comprehensible, as there was considerable material help given to the districts destroyed by the flood. The appearance of those districts (condition of the streets, sidewalks, infrastructure) is definitely better today than directly before the flood. Thus the perception of material profits from the experienced disaster is adequate.

## General Discussion

The research carried out both in Wrocław a few months after the flood, and in Opole three years afterwards, shows a very similar pattern of results. In general, the research participants from districts threatened by the flood see the advantages in the same way, regardless of the consequences of the disaster. In most cases they are unanimous in categorizing the positives, emphasizing the improvement of interpersonal relations and underestimating the advantages of mental character (the positive changes in personality and the increase in self-efficacy). The differences between both these groups concern the crucial measurable feature of material profits.

Thus, it seems possible to talk about the subjective advantages of the experienced disaster, at least to a certain extent. Certainly, the phase of deterioration of interpersonal relations appears after the period of heroic solidarity in the fight against the disaster. (It did not appear in this research because I did not use the tools necessary for its measurement). It does however appear that it is not always strong enough to cause the deterioration of interpersonal relations, in comparison to the period preceding the flood. The results found here suggest that the perception of these interpersonal relations in the areas where people struggled against the flood could be even better than in the period preceding the disaster. The results of the research carried out in Opole importantly suggest that this effect can remain in place for at least a few years.

In the research presented above the focus was on the potential advantages of the flood. It does not mean though that the thesis, according to which experiencing this sort of trauma can be advantageous is being defended. Quite the opposite: What can be said however, is that apart from the numerous and serious negative consequences there appear to be attempts to look at a situation of this type in a positive and optimistic way.

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