

## **FLOOD SURVEY RESULTS AND PROJECT SUMMARY**

Patricia L. Heyse, M.S.

September 15, 2000

The following is a summary of the background and results of my dissertation project, "An Application of Organizational Justice Theory to a Community Disaster." Many thanks to all who took the time and made the effort to participate in the telephone surveys that were completed during the spring. I appreciate your willingness to share your experiences with me and to contribute to this project.

### Introduction

This project explored the experiences of 103 individuals who were affected by the Fort Collins flood of July 28, 1997, and who lived in neighborhoods that suffered damage from drainage system overflows rather than from creek flooding. Although many others were greatly affected by the flood, the study focused on these neighborhoods because of the nature of the flooding they experienced. My interest in this project began when my own home was significantly damaged by the flood. In the months that followed, I had the opportunity to listen to the experiences and perspectives of many people who were similarly affected. In listening to these experiences, I noticed certain themes in many of the conversations. These themes included concerns about the adequacy of drainage systems, strong opinions, either positive or negative, about the City's response to these neighborhoods after the flood, and recurrent anxiety during the rainy season.

The project drew on three primary fields of study: community justice, disaster research, and organizational justice. Community justice programs use constructive conflict resolution methods, such as negotiation, third-party mediation, and restitution, in a variety of conflict situations that arise within communities. These may include conflicts among neighbors, restitution made by offenders to victims, and disputes over public policy matters such as land use and the adequacy of public services, among others (Duffy, 1991; McGillis, 1997).

Disaster researchers examine the effects of natural and "technological" disasters on individuals and communities. Natural disasters are events such as hurricanes, earthquakes, floods, and wildfires that occur in the natural world. Technological disasters involve some type of human interference with the environment. An example of a large-scale technological disaster is the Buffalo Creek flood in West Virginia in 1972. In this event, a man-made earthen dam collapsed, destroying several communities and killing more than 125 people. Disasters have been found to increase individuals' levels of anxiety, stress, and depression immediately after the event and, to a lesser extent, over time. Disasters have also been found to affect the morale and cohesiveness of communities (Bell, Greene, Fisher, & Baum, 1996; Erikson, 1976; Raphael, 1986).

Organizational justice has traditionally looked at the way that the processes and outcomes involved in making decisions in the workplace affect the satisfaction of employees and their attitudes toward management. Research has found that when employees have the opportunity to have input into the decision-making process, and feel that management makes decisions according to moral and ethical principles, treats employees with sensitivity and respect, and offers complete and accurate information and good explanations regarding the decisions, employees are more likely to feel satisfied

with the outcomes even of unpleasant decisions and to hold more favorable attitudes toward management (for a good summary, see Folger & Cropanzano, 1998).

This study attempted to expand organizational justice theories to the experiences of selected Fort Collins citizens after the flood. The stress experienced by residents as well as their evaluations of the City were examined. This project hoped to show that organizational justice is a useful way to systematically study the effects of decision-making processes and outcomes in settings other than the workplace and to test whether fair treatment might be related not only to participants' evaluations of the City but also to lower levels of stress.

### The Study

One hundred and three people, 44 men and 59 women, who were affected by stormwater and/or drainage system overflows took part in telephone surveys during the Spring of 2000. Neighborhoods were identified using flood maps that are available on the internet: <http://horton.eng2.uconn.edu/FortCollins/Pictures/6/collins.jpg>. Lists of property owners in these neighborhoods were obtained from the Larimer County web page: <http://www.co.larimer.co.us/depts/assess/query/search.cfm>, and telephone numbers were found in the local telephone directory. Nearly 400 properties were identified in these neighborhoods, however not all property owners could be reached by phone, several did not have time to participate, and many indicated that they had moved into the neighborhood since the flood and had not been affected. In addition, three of the completed surveys were not included in the final analysis because of the large number of omitted items.

The surveys took about 15 – 20 minutes for most people to complete, although a few took up to an hour. The survey questions asked about the financial damage sustained from the flood, the degree to which the flood disrupted daily life, stress levels during the year immediately after the flood, current stress as compared with stress just after the flood, evaluations of the City, and opinions about the fairness of flood relief and repair measures. Evaluations of the City included the ability to trust the City, anger toward the City, and feeling that the City was responsible for the flood damage. Questions about fairness asked about the opportunity to express opinions, the adequacy and accuracy of information provided, the quality of explanations, ethical behavior on the part of the City, and the degree of sensitivity and respect accorded to residents in their interactions with the City. Respondents were also asked to identify their gender, age group, length of time in their neighborhood, and average property values in their neighborhood. Finally, they were given the opportunity to make additional comments after the formal survey questions were completed.

### Survey Results

On average, study participants were 35-44 years old and had lived in their neighborhoods for about 13 years. Approximately 2/3 of the participants were married, about 1/8 were single, and another 1/8 were separated or divorced. The average respondent had slightly more than \$12,000 in damage and experienced considerable disruption of daily activities as a result of the flood. The average participant reported low to moderate stress immediately after the flood and moderate improvements in stress levels at the present time. On average, respondents viewed the City in a slightly negative

light, were slightly dissatisfied with flood compensation, and reported feeling that they had been treated somewhat unfairly by the City after the flood.

The study inquired about four initial research questions, however, since the study did not use an experimental design, it is not possible to draw cause-and-effect conclusions about the results. The first asked whether stress immediately after the flood was related to the financial damage, the extent of disruption of daily activities (life disruption), and whether or not residents felt fairly treated by the City after the flood. The study found that higher amounts of financial damage and life disruption were strongly related to higher stress levels and that feeling fairly treated was somewhat related to lower levels of stress.

The second research question asked whether improvements in stress levels since the flood were related to financial damage, life disruption, and to feeling fairly treated by the City. The results of this analysis showed that those who had experienced more financial damage and life disruption reported more improvements in stress since the flood, presumably because their initial stress had been higher and they had more room for improvement.

The third question asked whether financial damage, life disruption, and feeling fairly treated by the City after the flood were related to participants' current evaluations of the City. These evaluations included trusting the City, feeling angry toward the City, and feeling that the City was responsible for the damage in their neighborhoods. The study found that neither the amount of financial damage nor life disruption was related to evaluations of the City but that perceptions of fair treatment were strongly related to more favorable views of the City.

The fourth and final of the original research questions asked whether those who felt that they were treated fairly by the City were also satisfied with the compensation they received. A strong relationship between fair treatment and satisfaction was found.

After these original questions were examined, other questions that arose after the initial analysis were also explored. First, a strong relationship was found between lower stress levels and perceptions of fair treatment when financial damage and life disruption were not included in the analysis. Then, another strong relationship was found between positive evaluations of the City and lower stress levels. Finally, two analyses examined whether satisfaction with compensation received from the City (for flood relief and/or repair) might lessen the effects of damage and disruption on stress and evaluations of the City. Although satisfaction was not found to lessen these effects, it was found to be related to lower stress levels and to more favorable opinions of the City.

Following the data analysis, the informal comments of the participants were examined. One-fifth of the participants reported feeling anxious during summer storms even at the present time. Others described an increased sense of connectedness with their neighbors since the flood. Comments about the City ranged from very positive to very negative. These included satisfaction with the City's response after the flood and with improvements since the flood and, in contrast, decreased confidence in the City since the flood and concerns about both the adequacy of public utilities and the current approach to planning for new developments. It is interesting to note that, among those who commented that the survey appeared to be biased, some felt that the bias was toward the City while others remarked that the bias was against the City. Other comments involved recommendations that the City explore improved disaster preparedness and response

plans. Finally, many respondents commented that other agencies that responded to flood victims should also have been included in the study.

### Summary

This study explored the experiences of 103 residents of Fort Collins neighborhoods that were affected by stormwater and/or irrigation ditch overflows (as opposed to creek flooding) during the flood of July 28, 1997. Overall, residents reported low to moderate levels of stress during the year after the flood and indicated that their stress had improved moderately since that time. On average, people in the study expressed slightly unfavorable opinions about the City, felt slightly dissatisfied with the compensation they received, and felt that they were treated somewhat unfairly by the City on issues of flood relief and repair.

Early stress levels were higher among those with more financial damage and life disruption but were lower among those who felt that they were treated fairly by the City after the flood and who were satisfied with the compensation they received. Those who had more financial damage and life disruption reported greater improvements in stress levels since the flood. However, stress reductions over time were not related to feeling fairly treated by the City. Those who felt that they were treated fairly by the City and were satisfied with their compensation held more favorable opinions about the City than those who did not feel fairly treated or were dissatisfied with the compensation they received. Opinions about the City, however, were not related to the financial damage suffered or to the disruption of daily activities. Those who felt fairly treated were also more likely to be satisfied with the compensation they received. Furthermore, those who held more favorable opinions of the City also reported lower levels of stress.

Overall, these results suggest that when people feel that they are treated fairly, they report lower levels of stress and express more favorable opinions of City authorities and report more satisfaction with disaster compensation. Regarding the original goals of the study, the results suggest that the framework of organizational justice theories can be usefully applied to other settings, such as communities, and that fair treatment is related to personal stress levels as well as to opinions of City authorities.

Any study will be limited by a number of factors. The limitations of this project include, but are not limited to, the length of time elapsed since the flood, the relatively small number of participants, the unavailability of many potential participants, and the nature of the survey questions. I hope, however, that this project will encourage others to extend the use of organizational justice theories to settings outside the workplace and to attempt similar, but improved, methods to the study of other disasters.

For further information about this study, to express any questions or concerns, or to request a referral for counseling services, please contact Dr. Jacob Hautaluoma at 491-6278.

Again, thanks to everyone who participated for a rewarding and informative experience.

## References

- Bell, P.A., Greene, T.C., Fisher, J.D., & Baum, A. (1996). Environmental psychology, 4<sup>th</sup> edition. Washington, D.C.: American Psychiatric Association.
- Duffy, K.G. (1991). Introduction to community mediation programs: Past, present, and future. In K.G. Duffy, J.W. Grosch, & P.V. Olczak, (eds.). Community mediation: A handbook for practitioners and researchers. (pp. 21-34) New York: Guilford Press.
- Erikson, K.T. (1976). Everything in its path: Destruction of community in the Buffalo Creek flood. New York: Simon & Schuster.  
*Note: this is a very readable book about the effects of catastrophic flooding on a community*
- Folger, R., & Cropanzano, R. (1998). Organizational justice and human resource management. Thousand Oaks, CA: Sage Publications.
- McGillis, D. (1997). Community mediation programs: Developments and challenges. Washington, D.C.: U.S. Department of Justice. Available: <http://www.ncjrs.org>.
- Raphael, B. (1986). When disaster strikes: How individuals and communities cope with catastrophe. New York: Basic Books.