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COLLECTIVE EFFICACY FOLLOWING A SERIES OF NATURAL DISASTERS

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Collective efficacy perceptions one year after a series of natural disasters were investigated. Fifty participants exposed to the disasters completed Time 1 (3–8 weeks post-disasters). One year later, 46 of the original sample and 20 control participants were sampled. Results demonstrated that initial lost resources, perceptions of social support, and psychological distress contributed significantly to the prediction of collective efficacy beliefs one year later. In predicting Time 2 psychological distress, lost resources and Time 2 social support were the only significant predictors. Results supported a buffering effect of social resources (e.g., social support and collective efficacy) against psychological distress under conditions of high resource loss. Disaster exposed residents reported slightly higher levels of collective efficacy beliefs than controls, yet demonstrated a similar variability of these perceptions. The association between social support and collective efficacy differed between the two samples. Results are discussed in relation to how collective efficacy beliefs may function within the chaos of a natural disaster.

Keywords: Collective efficacy; Lost resources; Disaster; Coping; Social support; Communal mastery

On May 18, 1996, a 12 000 acre (4856 ha) fire ravaged the surrounding forest of Buffalo Creek, Colorado, a small (population approximately 100 full-time residents) picturesque community nestled in the mountains. The entire community was evacuated for 72 h, while firefighters fought to save homes and stop the wild fire from spreading. Several homes were lost to the blaze. Evacuated residents, who were relieved to find their homes still standing, were confronted with smoke damage and dramatic environmental devastation. Due to the deforestation, the community was at severe risk for flash flooding. During the month of June, several small flash floods did occur, but with little damage. On July 12, however, at approximately 9:00 p.m., a massive thunderstorm stalled over the community, dropping 2.5 inches (6 cm) of rain in a very short period of time. The reported water flow rates that night ranged from four to 25 times the Federal Emergency Management Agency 100-year flow values. The flood destroyed phone, water, and electrical services, and killed two residents. The main transportation routes into and out of the community were severed. Thus, in less than 2 months, this scenic community was turned into a wasteland of charred forest and flood

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debris. Residents were in shock and faced the daunting task of re-building the basic infrastructure of the community, while grieving for deceased neighbors. Approximately one year later, this community continued to be under a severe threat of flash flooding due to the denuded forest. The devastation of the fire and floods, combined with the continued threat of further destruction, provided the unique opportunity to investigate the role of community wide efficacy (i.e., collective efficacy) in coping with a future natural disaster.

Collective Efficacy is the shared belief that a group can effectively meet environmental demands and improve their lives through concerted effort (Bandura, 1997). Other researchers have investigated highly related constructs titled collective coping, communal coping, and communal mastery (Hobfoll, Jackson, Hobfoll, Pierce, and Young, 2002; Hobfoll, Schroder, Wells, and Malek, 2002; Mickelson, Lyons, Sullivan, and Coyne, 2001; Pennebaker and Harber, 1993; Wells, Hobfoll, and Lavin, 1997).

Research specifically on collective efficacy has demonstrated that perceptions of collective efficacy influence the group goals that are set, how resources are managed, the type of strategic plans that are made, perseverance during group adversity, and vulnerability to discouragement (Bandura, 1997). The community-wide demands in the aftermath of a natural disaster critically challenge the abilities of community members to work in a concerted and coordinated effort toward recovery. The very nature of mass disasters requires that limited resources be effectively managed, strategic plans generated, and steadfast group perseverance in the face of often-unresponsive environmental conditions. The purpose of this study was to extend the current literature on collective efficacy into the context of natural disaster recovery. The conceptual complexities involved with the construct of collective efficacy will now be explored.

Collective Efficacy Conceptualization

Bandura (1986), in his description of collective efficacy for social action, suggested that collective efficacy perceptions are "judgments about group capabilities to make decisions, to enlist supporters and resources, to devise and carry out appropriate strategies, and to withstand failures and reprisals" (p. 451). Zaccaro, Blair, Peterson, and Zazanis (1995) defined collective efficacy as a "sense of collective competence shared among individuals when allocating, coordinating, and integrating their resources in a successful concerted response to specific situational demands" (p. 309).

Definitions of related constructs reveal interesting similarities and differences. Communal mastery was defined by Hobfoll *et al*. (2002) as "a sense that individuals can overcome life challenges and obstacles through and because of their being interwoven in a close social network" (p. 856). Communal coping was conceptualized by Lyons, Mickelson, Sullivan, and Coyne (1998) as a cooperative problem-solving process. Finally, collective coping has been defined as social-based strategies for dealing with environmental threats (Hallman and Wandersman, 1992).

It is clear from these definitions that these constructs overlap in their focus on social-based processes in dealing with environmental challenges. However, it is important to differentiate that collective efficacy and communal mastery focus on *perceptions* of a group's ability to respond, whereas communal and collective coping focus on social coping *behaviors*.

Collective efficacy may be differentiated from communal mastery in that collective efficacy emphasizes the group's perception of its ability to meet environmental demands through a variety of targeted mechanisms including coordination of resources, solving community conflicts, and setting strategic goals (see Appendix A for items utilized to measure collective efficacy). Comparatively, communal mastery emphasizes deep social ties within the community in order to meet environmental challenges. One could conceive of a community with strong social ties through maladaptive behaviors (e.g., alcohol consumption) with poor perceived collective efficacy. Undoubtedly, however, strong social cohesion with positive coping responses would enhance the collective ability to respond. These varied definitions highlight the conceptual similarities and possible distinctions among these similar constructs.

Although individual perceptions of coping self-efficacy (i.e., the perceived capability for managing post-traumatic recovery demands) have shown to be important in psychological recovery following disasters (Benight and Bandura, 2004; Benight, Antoni, Kilbourn, Ironson, Fletcher, Redwine, Baum, and Schneiderman, 1997; Benight, Swift, Sanger, Smith, and Zeppelin, 1999; Benight, Ironson, Klebe, Carver, Wynings, Burnett, Greenwood, Baum, and Schneiderman, 1999; Benight, Freyaldenhoven, Hughes, Ruiz, Zoesche, and Lovallo, 2000; Benight and Harper, 2002; Murphy, 1987; Solomon, Weisenberg, Schwarzwald, and Mikulincer, 1988), the predictive value of collective efficacy following a natural disaster has not been investigated. Related literature will be reviewed, providing support for the study's hypotheses.

Collective Efficacy, Resources, Social Support, and Psychological Outcomes

Research on collective efficacy has been primarily conducted within the business (Prussia and Kinicki, 1996), athletic (Greenlees, Graydon, and Maynard, 1999, 2000; Hodges and Carron, 1992), and educational (Bandura, 1993; Parker, 1994; Schwarzer and Schmitz, 1999) settings. Consistently, studies have demonstrated that high levels of collective efficacy predict enhanced group performance. In addition, collective efficacy predicted level of goal setting (Mulvey and Klein, 1998; Prussia and Kinicki, 1996), group processing confidence (Prussia and Kinicki, 1996), effort (Lichacz and Partington, 1996), persistence (Hodges and Carron, 1992), affective reactions, and goal commitment (Greenlees *et al*., 2000). Although these studies have generated consistent results, the environmental settings have been non-traumatic in nature. A few studies were identified that focused more on collective community response related to general stress and limited trauma.

In a case study of the Pigeon River technological disaster, Soliman (1996) identified several factors that contributed to effective community response to the decades-long toxic polluting of their environment. Community activism over an extended period of time was found to be a very important factor in responding to traumatic exposure to severe pollutants. Although not directly addressing collective efficacy, this study demonstrates the importance of community-wide coordination of limited resources combined with an effective goal strategy toward some effective resolution.

Sampson, Raudenbush, and Earls (1997) investigated how neighborhoods cope with violent crime, with a particular focus on collective efficacy. This study found that neighborhood collective efficacy (defined as mutual trust and social cohesion among neighbors combined with their willingness to intervene on behalf of a common good, a construct probably more related to communal mastery than collective efficacy)

mediated between the effect of social resource disadvantage and residential instability on violence. Collective efficacy for the community was an important mechanism through which the negative effects of poor community resources and social instability influence violence levels.

Hobfoll *et al*. (2002) focused on Native American women's use of communal mastery (i.e., the belief in the community's ability to cope through close social connectedness) in dealing with life stress. This study demonstrated that under high stress, Native American women with a strong belief in communal mastery demonstrated lower psychological distress. This study provides support for investigating the importance of community wide perceptions of capability for overcoming severe stress such as a natural disaster.

Collective efficacy should have a direct effect on psychological distress based on previous research linking collective efficacy perceptions with affective responses (Greenlees *et al*., 2000). The belief that a community would not be able to effectively respond (i.e., low collective efficacy) in the case of a disaster could lead to a greater sense of personal vulnerability (e.g., the perceived ability for the US government to respond to another terrorist attack). Conversely, communities with higher levels of collective efficacy would perceive the community to be more effective at exerting appropriate informal social control in order to coordinate available resources in the most effective manner (e.g., emergency supplies, human capital).

Community connections that rally individuals toward collective recovery goals in order to reduce the impact of resource depletion have particular relevance to mass disaster research (Hobfoll, 1991; Hobfoll and Stephens, 1990; Kaniasty, Norris, and Murrell, 1990; Norris and Kaniasty, 1996). The social support deterioration deterrence model (Kaniasty and Norris, 1993; Norris and Kaniasty, 1996) and the conservation of resources theory by Hobfoll have shown that the deterioration of important resources (e.g., perceived social support following the disaster) results in increased distress levels. Disasters deplete vital community resources very rapidly, often leaving communities struggling to survive (Hobfoll, 1991). The initial surge in outside aid and community member mutual assistance is typically followed by a longer period of resource exhaustion (Kaniasty and Norris, 2004). One could speculate that neighborhoods or communities with greater social resource depletion would have lower levels of collective efficacy and thus higher negative outcomes. Indeed, factors such as removal of social ties due to death, destruction, and relocation combined with the increased probability of most potential helpers being unavailable due to their own recovery demands increase the potential for negative psychological outcomes (Kaniasty and Norris, 2004).

Thus, based on previous research and theory, collective efficacy perceptions should be related to psychological distress levels. Perceived social support availability and level of resources lost in the aftermath of a disaster should be related to community-wide perceptions of collective efficacy. Theoretically, social resources such as perceived social support availability and collective efficacy should serve as a buffer or moderate the effect of resource depletion following a disaster. Finally, the disaster itself should influence collective efficacy perceptions due to the community-wide disruption and demand for collective recovery. Based on this logic, we derived the following hypothesis:

Hypothesis I: Predictors of collective efficacy It was hypothesized that level of social support, lost resources, and distress levels early after the event would strongly influence

subsequent perceptions of collective efficacy for the community one year later. Specifically, we predicted that there would be a positive relationship between perceived social support and collective efficacy and a negative relationship between lost resources and distress with collective efficacy.

Hypothesis II: Collective efficacy and psychological outcomes It was hypothesized that lost resources and Time 2 social support would be significant predictors of psychological distress a year after the disasters controlling for important demographic variables. We also predicted that collective efficacy would be a significant predictor of psychological distress over and above demographic variables, lost resources, and social support.

Hypothesis III: Social resources as moderators of resource depletion It was predicted that social resources (social support availability and collective efficacy) would moderate the effect of resource loss on psychological distress.

Hypothesis IV: Disaster impact on shared group perception of collective efficacy It was hypothesized that the disaster would create significant disruption in the community infrastructure causing greater variability in perceived collective efficacy than in a comparison community that was minimally affected by the disasters. The increased variability is predicted due to the objective and subjective perception of differential community responsiveness in meeting individual needs.

Hypothesis V: Disaster impact on collective efficacy It was also hypothesized that the direct impact of the disaster on the community would influence collective efficacy perceptions (lower the average collective efficacy) and possibly influence the relationships between collective efficacy and other important variables (e.g., social support). More specifically, it was expected that the Buffalo Creek community directly affected by the fire and floods would have a lower average collective efficacy than a neighboring low-impact control community. Alternatively, it is conceivable that the community's response since the disasters could be seen as a rally to the cause resulting in stronger perceptions of the community's ability to respond to future events (i.e., the "weathered storm" hypothesis). In addition, we hypothesized that the anticipated relationships between the variables from Time 2 (social support, distress, and collective efficacy) would be stronger for the group exposed to the disasters than for the control sample.

METHOD

Procedure

This study was part of a larger study focused on coping self-efficacy as a predictor of psychological and physical functioning. The study utilized a longitudinal design with two assessment points. Fifty participants who lived within the affected areas of the fire and floods volunteered to complete the initial series of psychological questionnaires. Participation agreement was 100% with all potential participants who were approached. All Time 1 measurements were collected between 3 and 8 weeks after the flood ($M = 5.46$, $SD = 1.92$). The procedure included: (1) expressing to the experimenter what happened during the fire and the flood while having their blood pressure measured and (2) completing the questionnaire packet. Participants were paid $20. The

principal investigator briefed residents about the study. Written consent was obtained from all participants. Participants were interviewed in their homes by the principal investigator (licensed psychologist) for all but three interviews that were completed by graduate research assistants.

Of the original participants, 46 (90%) completed the second series of questionnaires approximately 1 year after the disasters ($M = 1$ year and 8 days). The vast majority of the participants' questionnaires were picked up at their homes. Participants were paid $20 and debriefed. For a more complete description of the procedures for the larger investigation, refer to Benight and Harper (2002). The final N for all regression analyses with the disaster group was 46.

The control sample was recruited only at the one-year sampling due to funding restrictions. The sample was chosen from a community approximately 15 miles (24 km) from the disaster that was not directly hit from the fire or floods and was comparable in basic demography. The sample was age- and gender-matched by identifying a matched pair based on gender and age in the experimental sample from Time 1. The control sample was gathered by having a display table advertising the study at a local fire department picnic. Potential participants were approached, screened for the matching variables, and offered the study if appropriate. When designing the follow-up data collection, the collective efficacy assessment was developed. Thus, we did not assess collective efficacy at the initial measurement.

Participants

Disaster sample Slightly less than half of the participants were female (41%). Median income was $30 000–35 000 (see Table I for descriptive statistics). The sample was almost exclusively Caucasian (94%) and middle-aged (M = 55; SD = 17; range = 59). The employment of participants was mixed, with about a third retired (36%), half currently employed (49%), and the rest unemployed. Most of the sample were married or living with a partner (77%) and owned their home (80%).

Disaster exposure Slightly more than half of the participants (60%) reported experiencing some damage due to the disasters. Although most of the participants did not feel their lives were threatened during either the fire or the flood, 16% (7 individuals) reported that their lives were moderately to very much threatened by the flood. A third of participants reported moderate to severe harm from the combined effect of the disasters, with a quarter indicating an injury due to the disasters. Four of the individuals in the sample lost their home to the fire. Forty-four percent of participants provided assistance to another community member during the fire, whereas 60% indicted that they helped someone during the flood. Interestingly, 11% and 13% indicated they needed help but did not get it during the fire and flood, respectively. In responding to a question how desperate the person felt during the disasters (1 = not at all to 7 = completely), 51% indicated that they had experienced at least moderate (4 = moderately) to severe desperation during the disasters. Almost a fifth of the sample (18%) indicated that they had seen someone die or dead as a result of the flood. However, no one in the sample lost a loved one in the fire or flood.

Control sample Half of the control sample were female (50%). The median income was $35 000–40 000 (see Table I for descriptive statistics). The sample was almost identical to the disaster community, with the overwhelming majority being Caucasian

(90%) and middle-aged ($M = 56$; $SD = 14$; range = 48). The employment of control participants was very similar to the disaster sample, with about a quarter retired (25%), half currently employed (56%), and the rest unemployed. Most of the sample was married and living with a partner (65%) and owned their home (80%).

Measures

Collective efficacy measure Zaccaro *et al.* (1995) make the point that collective efficacy is not simply the aggregation of individual group member's self-efficacy level; rather, it is the combination of perceived abilities of other group members to respond in addition to the ability of the group to effectively interact to manage situational demands. A 12-item measure of collective efficacy was developed (see Appendix A for all items). Participants indicated on a scale from 1 (Not well at all) to 7 (Very well) how well they felt the community could currently manage the community-wide responses to a future disaster. Thus, current perceptions were assessed, rather than retrospective beliefs on how the community had responded during the last year. Internal reliability for this measure was excellent with an $\alpha = .96$.

Loss of resources The Loss of Resources (LOR) scale used in this study was a 40-item 5-point Likert scale 0 (No loss) and 4 (Extreme amount of loss) used to assess the degree of loss (e.g., pets, sentimental possessions, time to do work, etc.) experienced by victims of natural disasters. This scale was adapted from Freedy, Shaw, Jarrell, and Masters (1992) by reducing the number of psychological losses and adding more material losses. The LOR measure was developed from Hobfoll's (1989) conservation of resources model of stress. Evidence for reliability and validity is reported in Hobfoll, Lilly, and Jackson (1992). For this sample, the internal consistency reliability was excellent, with a Cronbach alpha of .94.

Social support The Interpersonal Support Evaluation List (ISEL) was utilized to measure social support (Cohen, Mermelstein, Kamarck, and Hoberman, 1985). The ISEL is a 40-item assessment where items are answered true or false. The measure is made up of four subscales that assess different facets of perceived social support availability including: tangible support (i.e., instrumental aid), appraisal support (i.e., someone to talk to about problems), belonging support (i.e., people with whom to associate), and self-esteem support (i.e., positive social comparison individuals). For the purpose of this study, a total social support score was utilized. Items were answered either true or false indicating support or lack thereof depending on the wording of the item. The measure was summed after 20 of the reverse scored items were recoded. Thus, the higher the score, the greater the perceived support. In support for the validity of the ISEL, significant correlations have been reported with it and other measures of social support (e.g., Inventory of Socially Supportive Behaviors; Cohen et al., 1985). Internal reliability for this sample was very good, with a reliability coefficient of .90. Test–retest reliabilities for the general population with 2-day and 6-week intervals were .87 and .70, respectively. Standard instructions were given to participants without reference to the time since the events.

Impact of event scale (IES) The original Impact of Event Scale (Horowitz, Field, and Classen, 1993) was utilized for this study. This is a 15-item scale that assesses post-traumatic symptoms following a traumatic event. Intrusive thoughts, emotional

numbing, and avoidance behaviors are asked. Respondents answered how often in the past 7 days they have been experiencing the different symptoms from 1 (Not at all) to 4 (Often). This scale has shown adequate reliability and validity (Horowitz *et al*., 1993). The scores were also converted to be comparable with other disaster studies utilizing 0 (Not at all) to 5 (Often). Both scoring methods are presented. The internal reliability estimate for the control sample was $\alpha = .83$ and $a = .91$ in the disaster group.

Demographic assessment Participants responded to a short 13-item set of demographic questions (e.g., age, gender, education level, current income, religious preference, marital status).

RESULTS

Descriptive statistics for the main variables in the study are provided in Table I. Bivariate correlations for the main study variables in the Buffalo Creek sample are depicted in Table II. As expected, significant relationships were found between collective efficacy, lost resources, social support, and psychological distress.

For the disaster sample using the 1–4 scoring for the IES, the mean intrusion score at one year was 13.59 ($SD = 13.58$), and the mean for the avoidance score was 15.24 ($SD = 5.34$). The total IES average score at one year was 28.83 ($SD = 9.75$). These averages are slightly higher than the average scores from a sample of community residents assessed four months following the Albion, Pennsylvania tornado that killed 12 people ($M_{\text{avoid}} = 13.50$; $M_{\text{int}} = 13.75$; $M_{\text{tot}} = 27.25$) and another sample gathered 4 months after the Parsons' West Virginia flood killed 47 people ($M_{\text{avoid}} = 11.50$; $M_{\text{int}} = 10.05$; $M_{\text{tot}} = 21.05$; Steinglass and Gerrity, 1990).

Using the 0–5 scoring, the mean for the IES intrusion subscale 9.35 ($SD = 8.43$) and the mean IES avoidance score was 10.46 ($SD = 8.54$) at the 1-year follow-up. These means are comparable to the average intrusion score ($M = 12.61$) and mean avoidance score ($M = 11.16$) reported for a non-clinical sample of railway disaster victims in Stafford, UK, measured approximately 7 months after the disaster (Chung, Farmer, Werrett, Easthope, and Chung, 2001). By comparison, our control group had an intrusion mean of 4.05 ($SD = 4.32$) and an avoidance mean of 5.60 ($SD = 6.16$), suggesting this group was experiencing minimal distress (see Table I for the means and standard deviations of the other main study variables).

Hypothesis I

Hierarchical multiple regression was used to determine Time 1 predictors of Time 2 collective efficacy perceptions. Age, gender, education, income, loss of resources, Time 1 social support, and Time 1 psychological distress levels were included as predictor variables. Results partially supported the hypothesis demonstrating that amount of lost resources, social support perceptions, and level of initial distress would be significant predictors of collective efficacy perceptions in the community a year later, $F(6,37) = 10.61$, $p = .00$; see Table III. Lost resources and social support correlated in the expected direction with collective efficacy. However, initial level of distress related positively rather than negatively.

TABLE I Descriptive Statistics for Study Variables

	Buffalo Creek sample n = 46			*Control sample n = 20*		
Variable	*M*	*SD*	*Range*	*M*	*SD*	*Range*
Age	55.38	17.11	59	56.45	14.40	48
Education	3[a]	–	4	3.5[a]	–	4
Income	7[a]	–	12	7[a]	–	12
Lost Resources	26.02	28.39	113	–	–	–
Collect Efficacy	67.07	14.58	60	60.25	13.37	45
Social Support 2	34.73	5.93	23	34.50	5.60	22
IES Total Time 1	23.56	15.16	73	–	–	–
IES Intrusion Time 1	11.36	7.97	33	–	–	–
IES Avoidance Time 1	12.20	8.27	40	–	–	–
IES Total Time 2	19.80	15.93	73	9.65	9.52	28
IES Intrusion Time 2	9.35	8.43	35	4.05	4.32	12
IES Avoidance Time 2	10.46	8.54	38	5.60	6.16	20

Note. Education: 1 = Some High School to 5 = Graduate School; Income: 1 = Under $5000 to 13 = Over $60 000. IES = Impact of Event Scale using 0, 1, 3, 5 scoring.
[a]Median.

TABLE II Bivariate Correlations Among Study Variables for the Buffalo Creek Sample

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
1. Age	1.000									
2. Gender	.20	1.000								
3. Education	.10	.09	1.000							
4. Income	.36**	.11	.49**	1.000						
5. Lost Res	−.48**	−.13	−.03	−.18	1.000					
6. Collect Efficacy	.36*	.02	.01	.05	−.67**	1.000				
7. Social Sup 1	.29*	.05	−.19	.05	−.48**	.67**	1.000			
8. Social Sup 2	.22	−.12	.07	.16	−.36*	.50**	.73**	1.000		
9. IES Time 1	−.42**	−.29*	−.10	−.33*	.65**	−.33*	−.44**	−.45**	1.000	
10. IES Time 2	−.21	−.16	−.12	−.22	.60**	−.54**	−.63**	−.57**	.68**	1.000

Note. Gender Male = 1, Female = 0. Lost Res = Lost Resources; Social Sup = Social Support; IES = Impact of Event Scale. *$p < 0.05$ level (2-tailed); **$p < 0.01$ level (2-tailed).

Hypothesis II

Hierarchical regression analysis was used to test whether collective efficacy beliefs would be a significant predictor of psychological distress at Time 2. Specifically, age, gender, income, education, lost resources, and Time 2 social support were entered in step 1 as a block. Collective efficacy was entered alone in step 2 (see Table IV). Results demonstrated that collective efficacy did not explain any additional variance over and above the other variables, $F(1,36) = .548$, $p = .46$. The initial block of demographic variables and lost resources and social support explained a significant amount of the variance (adjusted $R^2 = .50$, $F(6,37) = 8.07$, $p < .00$). In the final model with all variables (adjusted $R^2 = .49$, $F(7,36) = 6.91$, $p = .00$), lost resources and social support at Time 2 were the only significant predictors (see Table IV). Lost resources demonstrated a positive relationship suggesting the greater the resource depletion,

TABLE III Hierarchical Regressions with Age, Lost Resources, Social Support Time 1, and Psychological Distress Time 1 Predicting Collective Efficacy at Time 2

	Outcome variable collective efficacy			
Variable	*B*	*SE B*	*β*	*Adjusted R^2*
Age		.03	.10	.03
Gender		.18	3.03	.01
Education	2.22	1.44	.17	
Income		−.40	.50	−.10
Lost Resources	−.31	.07	−.62**	
Social Support 1	1.53	.32	.56**	
IES Time 1	.33	.14	.35*	.62**

*$p < .05$. **$p < .01$; $n = 44$

the greater the psychological distress. Social support demonstrated a negative relationship demonstrating the greater the perceived availability of social support, the lower the psychological distress.

Hypothesis III

Two hierarchical multiple regressions were utilized to test the moderating effects of social resources on resource depletion (see Table V). The first regression tested the buffering effect of perceived social support by first entering lost resources in the first block. The second block consisted of Time 2 perceived social support and collective efficacy. The final block was the standardized residual of the product between social support (or collective efficacy) and lost resources. (The standardized residual for the product between the prime independent variables and the product of the two variables

TABLE IV Hierarchical Regression with Age, Gender, Income, Education, Collective Efficacy, Lost Resources, and Time 2 Social Support Predicting Psychological Distress

	Outcome variable: IES Time 2		
Variable	*B*	*SE B*	*β*
Step 1			
Age	.17	.13	.18
Gender	−6.23	3.63	−.19
Income	−.32	.61	−.07
Education	−.94	1.78	−.06
Lost Resources	.27	.07	.49**
Social Supp 2	−1.21	.32	−.45**
Step 2			
Age	.18	.13	.19
Gender	−6.33	3.65	−.20
Income	−.43	.63	−.10
Education	−.85	1.80	−.06
Lost Resources	.23	.09	.43**
Social Supp 2	−1.11	.35	−.41**
Collect Efficacy	−.13	.18	−.12

Note. Step 1 $\Delta R^2 = .57$, $p < .00$; Step 2 $\Delta R^2 = .00$, $p = .46$; *$p = .05$; **$p = .01$; $n = 44$.

TABLE V Series of Hierarchical Regressions Testing Moderating Effects of Social Resources on Lost Resources Predicting Psychological Distress

	Outcome Variable: IES Time 2 n = 46								
	Moderating Effect of Social Support					*Moderating Effect of Collective Efficacy*			
Variable	*B*	*SE B*		ΔR^2	*Variable*	*B*	*SE B*		ΔR^2
Step 1									
Lost Resources	.32	.07	.60**	.35**					
Step 2									
Lost Resources	.23	.08	.42**						
Social Supp 2	−1.06	.34	−.40**						
Collect Efficacy	−.07	.17	−.06	.15**					
Step 3					*Step 3*				
Lost Resources	.28	.08	.51**		Lost Resources	.23	.07	.42**	
Soc Supp 2	−1.20	.32	−.45**		Soc Supp 2	−.98	.31	−.37**	
Collect Efficacy	−.12	.32	.11		Collect Efficacy	−.08	.16	−.07	
Lost Res × Soc Supp	−4.73	1.82	−.29*	.07*	Lost Res × Coll Eff	−4.94	1.62	−.30**	.09**

*$p < .05$; **$p < .01$.

was used to reduce the concern of multicollinearity between the lower order variables and the interaction term; see Burrill, n.d.) Results supported the buffering effect of social support demonstrating a significant interaction term ($\Delta R^2 = .07$, $F(1,41) = 6.79$, $p < .05$; adjusted $R^2 = .58$, $F(4,41) = 13.89$, $p = .00$). Similar findings were identified for collective efficacy ($\Delta R^2 = .09$, $F(1,41) = 9.28$, $p < .01$; Adjusted $R^2 = .56$, $F(4,41) = 15.14$, $p = .00$). The interaction term for collective efficacy explained slightly more variance (9% vs. 7%). Median splits were generated for Time 2 social support, collective efficacy, and lost resources in order to complete two separate 2 (lost resources high/low) $\times 2$ (social support or collective efficacy high/low) ANOVAs for graphical purposes. Figs. 1 and 2 depict the interactions and demonstrate that only under conditions of high resource loss do social resources (i.e., social support or collective efficacy) buffer individual levels of psychological distress.

Hypothesis IV

Lavene's test of homogeneity of variance was utilized to test Hypothesis IV comparing variability of belief in collective efficacy for the Buffalo Creek community with the comparison sample. The test showed that the two groups did not differ relative to their variability (Levene Statistic = .039, $p = .84$). A Kolmogorov–Smirnov test was also conducted to compare the two groups relative to the shapes of their distributions. There was no significant difference (Kolmogorov–Smirnov Z = .06).

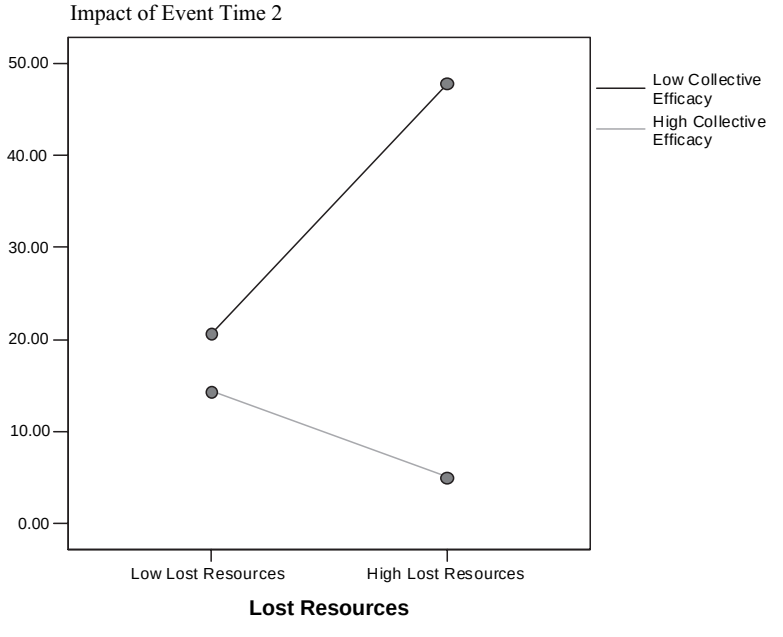

FIGURE 1 Graphical representation of collective efficacy buffering effect for lost resources on psychological distress.

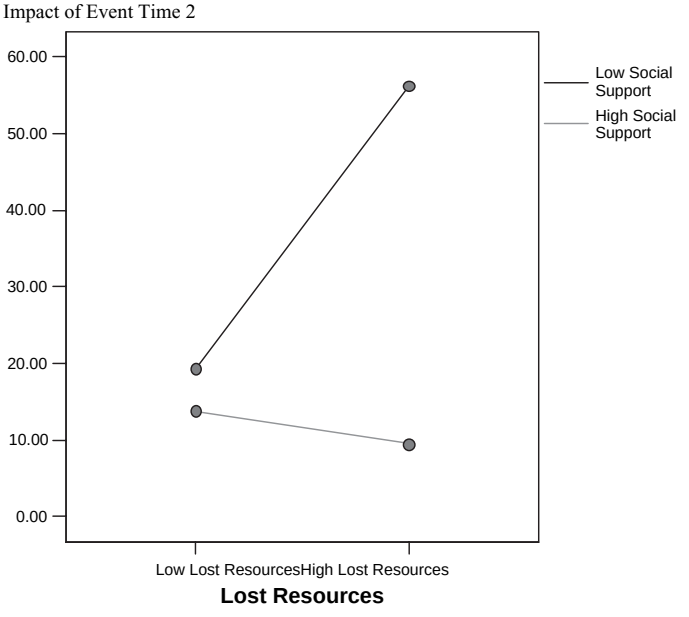

FIGURE 2 Graphical representation of social support buffering effect for lost resources on psychological distress.

Hypothesis V

A simple *t*-test was conducted to determine whether the control community would have a higher average collective efficacy level than the disaster community. Results provide no support for this hypothesis. The findings showed the Buffalo Creek residents reported a slightly higher, rather than lower, level of collective efficacy on average ($M = 67.07$) than the comparison community ($M = 60.25$), a difference that was marginally significant ($t(64) = 1.78$, $p = .079$).

In comparing the relationships among the variables from Time 2 (social support, distress, and collective efficacy) between the disaster exposure sample and the control group, the correlations between perceived support and collective efficacy differed significantly ($r_e = .50$; $r_c = -.30$; $z = -3.01$, $p < .05$) and were in opposite directions. The negative relationship between distress and collective efficacy was stronger in the disaster group than the control group, but not significantly different ($r_e = -.536$; $r_c = -.329$; $z = .904$, $p =$ ns). Finally, the association between distress and social support was not different between the two groups ($r_e = -.57$; $r_c = -.24$; $z = 1.45$, $p =$ ns).

In an attempt to explore more in-depth the perceptions of collective efficacy comparing the two communities, we conducted ANOVAs for each of the items in the collective efficacy measure. Interestingly, the Buffalo Creek community reported higher levels of perceived confidence in the community's ability to "quickly coordinate community wide action," and develop "organizational structure to delegate responsibility to the most appropriate individuals to meet crisis demands" ($M_e = 5.96$ vs $M_c = 5.05$, $M_e = 5.78$ vs $M_c = 4.95$, respectively). Given that these comparisons were not controlling for multiple comparisons and that the questions were single-item analyses, they should be interpreted with caution. None of the other items in the questionnaire differed between the two groups.

DISCUSSION

Results from this study provide mixed support for the hypotheses. Early after the disaster, reported levels of lost resources, social support, and psychological distress all contribute significantly to the prediction of future collective efficacy beliefs. Lost resources and social support correlated in the expected direction, suggesting that greater levels of social support relate to stronger perceptions of collective efficacy, and greater resource loss relates to lower levels of perceived collective efficacy. Initial levels of distress, however, demonstrated a small bivariate correlation in the anticipated negative direction with collective efficacy, but demonstrated a positive small standardized beta weight when social support and lost resources were included in a regression model. This is very difficult to interpret and suggests that the interrelationships among the three independent variables are influencing this unanticipated effect.

Interestingly, the level of reported resource depletion and perceived social support were strong predictors in the model underscoring the importance of basic infrastructure and social network disruption early after a disaster as critical to eventual beliefs in the community's perceived collective ability to respond to future events (Freedy *et al*., 1992; Freedy, Saladin, Kilpatrick, Resnick, and Saunders, 1994; Hobfoll, 1991; Kaniasty *et al*., 1990; Kaniasty and Norris, 1993). These results have direct implications for community-wide recovery in that they target where acute interventions could assist in helping the overall community strengthen their perceived ability to respond to a subsequent tragedy. Helping community members early after a disaster to recover lost resources and enhance connections to social networks should help to offset the potential deterioration of community efficacy or perhaps even enhance it (Hobfoll, 1991; Kaniasty *et al*., 1990; Kaniasty and Norris, 1993, 2004).

Future research investigating the relationships among these primary variables (e.g., resource loss, collective efficacy, social support, and psychological adjustment) following a natural disaster should utilize a more dynamic approach by measuring the effect of changes in these factors across time (see Holahan, Moos, Holahan, and Cronkite, 1999, for an excellent example of this methodology).

In addition to assessing the factors from the early aftermath of the disaster that predict subsequent collective efficacy perceptions, we were able to identify a set of predictors that were important for explaining psychological distress one year after the disasters. Results suggest that resource loss during the disaster and current perceived availability of social support are important to understanding psychological distress a year after the disasters. This finding is consistent with numerous previous studies (Freedy *et al*., 1992, 1994; Kaniasty *et al*., 1990; Norris and Kaniasty, 1996; Sattler *et al*., 2002). Collective efficacy does not appear to be predictive of distress when resource loss and social support are taken into account.

However, when testing for moderating effects of distress, collective efficacy and social support serve as buffers under conditions of high resource loss. When resource loss is high, individuals without perceived social support or collective efficacy report significantly higher distress levels compared with those with strong beliefs in these social resources. These results are consistent with the previous study by Hobfoll *et al*. (2002) that found communal mastery buffered against psychological distress under conditions of high stress.

The buffering effect of social support and collective efficacy within a disaster environment provides further evidence for the importance of social resources in coping with natural disasters over time (Kaniasty and Norris, 2004). Social resource deterioration is often found in the long-term recovery from natural disasters and has been linked with psychological distress. These findings have implications for how emergency response agencies might re-conceptualize disaster intervention from a short-term acute situation to a more long-range recovery process that includes both individual and social needs. ''Booster'' interventions that focus on more social resource necessities that emerge in the long run might help communities generate opportunities for social connection and foster a belief in group mastery for ''weathering the storm.'' A tangible example from the present disasters would be relief assistance to help rebuild the local community center (which was destroyed in the flood) fostering community cohesion and providing opportunities for support where community recovery successes could be shared.

The results did not show that greater exposure to devastation by a natural disaster results in lower average perceived levels of collective efficacy compared with a low-impact community a year after the events. In fact, the Buffalo Creek community on average reported slightly higher levels of collective efficacy than the comparison group.

A number of explanations might be offered to explain this finding. First, the comparison group chosen for this study was another small mountain community only 15 miles (24 km) from the disaster community. One could argue that this group was also significantly affected by the disasters that occurred only a short distance away. Indeed, the comparison community was evacuated during the fire. It is possible that this comparison group could be considered a less exposed group, rather than a non-stressed control sample. However, this community did not experience any of the resource devastation and reported significantly lower psychological distress.

It is also probable that a predicted deterioration in perceived collective efficacy was not seen due to the community's recent experience with effective collective response (Bandura, 1997). Evidence exists that supports this contention. This small rural community, without any governmental structure, was able to collectively respond to the host of problems they encountered in a very short amount of time. A crisis committee comprising community members was formed within hours of the flood. They were recruited based upon specific criteria: (1) their ability to represent various groupings or organizations that existed in the area, (2) specific skills and/or experience helpful to the tasks of the committee, (3) unlimited time availability and (4) previous management, decision-making or administrative experience. The task of the crisis committee was to coordinate recovery efforts. The head of the crisis committee explained in an interview the importance of the crisis committee.

> It quickly became apparent that these [relief] agencies were designed, structured and staffed, as well as accustomed, to dealing with local government entities and assisting them in coping with emergencies rather than dealing individually with a host of victims, each with specific and diverse problems. It was also clear that this was the mode in which they could operate most efficiently and be of the most assistance. In as much as we had no such local government, it obviously was incumbent upon us to create some sort of analogous structure to speak, decide and act for, and on behalf of, our little community.

This type of organized, in-depth, approach to recovery demonstrates the ability for this community to formulate an effective collective response. Indeed, this community of 100

full-time residents was able to secure hundreds of thousands of dollars in grants and donations to repair their town infrastructure. Thus, the community was able to reverse the resource loss caused by the disasters due to a coordinated group effort, undoubtedly influencing future collective efficacy beliefs.

It is also conceivable that collective efficacy perceptions change over time. Differences between the two communities could have existed before our assessment. The lack of assessment of collective efficacy early after the disasters makes this explanation impossible to determine.

Although the disaster did not appear to differentially affect collective efficacy perceptions between the two communities at one-year post-disasters, it did seem to have an impact on the relationship between social support perceptions and collective efficacy. Indeed, the correlations were in opposite directions between those who were exposed directly to the disaster environment ($r = .50$, $n = 46$) and those who were not ($r = -.30$, $n = 20$).

Speculating, it is possible that the community demands in the aftermath of these disasters required Buffalo Creek community members to focus more on social support providing more positive expectation for collective efficacy (Kaniasty and Norris, 2004). Alternatively, the control community did not have an opportunity to experience the community coming together. It is unclear, however, why individuals in the control condition with greater perceived social support would actually believe that the community would be less efficacious in the event of a disaster. Future research on the relationship between perceptions of received and availability of social support and collective efficacy is needed.

Finally, the disaster did not appear to create increased variability in perceived collective efficacy. Future longitudinal research that tracks collective efficacy perceptions across time may help to examine variability changes in more depth.

Limitations of this study are critical to keep in mind when interpreting these data. This is a very homogenous sample comprising slightly older middle- and upper-middle-income Caucasian adults. In addition to the homogenous nature of the sample, it was also not randomly selected. Thus, extrapolation of these data is restricted. Another limitation is the small sample size that resulted in relatively low statistical power. However, our results are relatively robust. Another significant limitation of the study is the lack of a control group sample at Time 1 or a measure of collective efficacy at the initial sampling period. Finally, a more multifactorial assessment of outcomes linked by previous research to collective efficacy would have provided more insight into how this construct works within the post-disaster environment. For example, some objective assessment of group perseverance, goal setting, group cohesion would have offered a deeper appreciation for the effects of collective efficacy in this type of setting.

In summary, due to the destructive and destabilizing aspects of disasters, individual and collective coping abilities are often stretched to capacity. Community members must work in a concerted and coordinated effort to move toward recovery, persevering when environments are non-responsive, managing limited resources in the most efficient and effective manner, and identifying and assisting those most in need. Interventions that enhance collective efficacy perceptions combined with enhanced resource availability may provide important ingredients for successful individual and community-wide adaptation.

References

Bandura, A. (1986). *Social foundations of thought and action*. Prentice-Hall, Englewood Cliffs, NJ.

Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist*, **28**, 117–148.

Bandura, A. (1997). *Self-efficacy and agency of change*. Raven Press, New York.

Baum, A. and Schneiderman, N. (1999). Coping self-efficacy as a predictor of psychological distress following a natural disaster: A causal model analysis. *Anxiety, Stress and Coping*, **12**, 107–126.

Benight, C., Antoni, M., Kilbourn, K., Ironson, G., Fletcher, M., Redwine, L., Baum, A. and Schneiderman, N. (1997). Coping self-efficacy buffers psychological and physiological disturbances in HIV-infected men following a natural disaster. *Health Psychology*, **16**, 248–255.

Benight, C.C. and Bandura, A. (2004). Social cognitive theory of posttraumatic recovery: The role of perceived self-efficacy. *Behaviour Research and Therapy*, **42**, 1129–1148.

Benight, C.C., Freyaldenhoven, R, Hughes, J., Ruiz, J.M., Zoesche, T.A. and Lovallo, W. (2000). Coping self-efficacy and psychological distress following the Oklahoma City Bombing: A longitudinal analysis. *Journal of Applied Social Psychology*, **30**, 1331–1344.

Benight, C.C. and Harper, M. (2002). Coping self-efficacy as a mediator for distress following multiple natural disasters. *Journal of Traumatic Stress*, **15**, 177–186.

Benight, C.C., Ironson, G., Klebe, K., Carver, C., Wynings, C., Greenwood, D., Burnett, K., Baum, A. and Schneiderman, N. (1999). Conservation of resources and coping self-efficacy predicting distress following a natural disaster: A causal model analysis where the environment meets the mind. *Anxiety Stress and Coping*, **12**, 107–126.

Benight, C., Swift, E., Sanger, J., Smith, A. and Zeppelin, D. (1999). Coping self-efficacy as a mediator of distress following a natural disaster. *Journal of Applied Social Psychology*, **29**, 2443–2464.

Burrill, D.F. (n.d.). Modeling and interpreting interactions in multiple regression. Retrieved July 1, 2004, from http://www.minitab.com/resources/whitepapers/burri12.aspx.

Chung, M.C., Farmer, S., Werrett, J., Easthope, Y. and Chung, C. (2001). Traumatic stress and ways of coping of community residents exposed to a train disaster. *Australian and New Zealand Journal of Psychiatry*, **35**, 528–534.

Cohen, S., Mermelstein, R., Kamarck, T. and Hoberman, H.M. (1985). Measuring the functional components of social support. In: Sarason, I.G. and Sarason, B.R. (Eds.), *Social support: theory, research and applications*, pp. 73–94. Martinus Nijhoff, Boston, MA.

Freedy, J.R., Saladin, M.E., Kilpatrick, D.G., Resnick, H.S. and Saunders, B.E. (1994). Understanding acute psychological distress following natural disaster. *Journal of Traumatic Stress*, **7**, 257–273.

Freedy, J.R., Shaw, D.L., Jarrell, M.P. and Masters, C.R. (1992). Towards an understanding of the psychological impact of natural disasters: An application of the conservation of resources stress model. *Journal of Traumatic Stress*, **5**, 441–454.

Greenlees, L.A., Graydon, J.K. and Maynard, I.W. (1999). The impact of collective efficacy beliefs on effort and persistence in a group task. *Journal of Sports Sciences*, **17**, 151–158.

Greenlees, L.A., Graydon, J.K. and Maynard, I.W. (2000). The impact of collective efficacy beliefs on effort and persistence in a group task. *Journal of Sports Sciences*, **18**, 451–468.

Hallman, W.K. and Wandersman, A. (1992). Attribution of responsibility and individual and collective coping with environmental threats. *Journal of Social Issues*, **48**, 101–118.

Hobfoll, S.E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, **44**, 513–524.

Hobfoll, S.E. (1991). Traumatic stress: A theory based on rapid loss of resources. *Anxiety Research*, **4**, 187–197.

Hobfoll, S.E., Jackson, A., Hobfoll, I., Pierce, C.A. and Young, S. (2002). The impact of communal-mastery versus self-mastery on emotional outcomes during stressful conditions: A prospective study of Native American women. *American Journal of Community Psychology*, **30**, 853–872.

Hobfoll, S.E., Lilly, R. and Jackson, A. (1992). Conservation of social resources. In: Veiel, H. and Baumann, U. (Eds.), *The meaning and measurement of social support*, pp. 125–141. Hemisphere, Washington, DC.

Hobfoll, S.E., Schroder, K.E.E., Wells, M. and Malek, M. (2002). Communal versus individualistic construction of sense of mastery in facing life challenges. *Journal of Social and Clinical Psychology*, **22**, 362–399.

Hobfoll, S. and Stephens, M.P. (1990). Social support during extreme stress: Consequences and intervention. In: Sarason, R.R., Sarason, I.G. and Pierce, G.R. (Eds.), *Social support: An interactional view*, pp. 454–481. Wiley, New York.

Hodges, L. and Carron, A.V. (1992). Collective efficacy and group performance. *International Journal of Sport Psychology*, **23**, 48–59.

Holahan, C.J., Moos, R.H., Holahan, C.K. and Cronkite, R.C. (1999). Resource loss, resource gain and depressive symptoms: A 10-year model. *Journal of Personality and Social Psychology*, **77**, 620–629.

Horowitz, M.J., Field, N.P. and Classen, C.C. (1993). Stress response syndromes and their treatment. In: Goldberger, L. and Breznitz, S. (Eds.), *Handbook of stress: Theoretical and clinical aspects*, pp. 757–773. The Free Press, New York.

Horowitz, M.J., Wilner, N. and Alvarez, W. (1979). Impact of event scale: A measure of subjective stress. *Psychosomatic Medicine*, **41**, 209–218.

Kaniasty, K. and Norris, F.H. (1993). A test of the social support deterioration model in the context of natural disaster. *Journal of Personality and Social Psychology*, **65**, 395–408.

Kaniasty, K. and Norris, F.H. (2004). Social support in the aftermath of disasters, catastrophes, and acts of terrorism: Altruistic, overwhelmed, uncertain, antagonistic, and patriotic communities. In: Ursano, R., Norwood, A. and Fullerton, C. (Eds.), *Bioterrorism: Psychological and public health interventions*, pp. 200–229. Cambridge University Press, Cambridge.

Kaniasty, K., Norris, F.H. and Murrell, S.A. (1990). Received and perceived social support following natural disaster. *Journal of Applied Social Psychology*, **20**, 85–114.

Lichacz, F.M. and Partington, J.T. (1996). Collective efficacy and true group performance. *International Journal of Sport Psychology*, **27**, 146–158.

Lyons, R.F., Mickelson, K.D., Sullivan, M.J.L. and Coyne, J.C. (1998). Coping as a communal process. *Journal of Social and Personal Relationships*, **15**, 579–605.

Mickelson, K.D., Lyons, R.F., Sullivan, M.J. and Coyne, J.C. (2001). Yours, mine, ours: The relational context of communal coping. In: Sarason, B.R. and Duck, S. (Eds.), *Personal relationships: Implications for Clinical and Community Psychology*, pp. 181–200. Wiley, New York.

Mulvey, P.W. and Klein, H.J. (1998). The impact of perceived loafing and collective efficacy on group goal processes and group performance. *Organizational Behavior and Human Decision Making*, **74**, 62–87.

Murphy, S. (1987). Self-efficacy and social support mediators of stress on mental health following a natural disaster. *Western Journal of Nursing Research*, **9**, 58–86.

Norris, F.H. and Kaniasty, K. (1996). Received and perceived social support in times of stress: A test of the social support deterioration deterrence model. *Journal of Personality and Social Psychology*, **71**, 498–511.

Parker, L.E. (1994). Working together: Perceived self- and collective-efficacy at the workplace. *Journal of Applied Social Psychology*, **24**, 43–59.

Pennebaker, J.W. and Harber, K.D. (1993). A social stage model of collective coping: The Loma Prieta earthquake and the Persian Gulf War. *Journal of Social Issues*, **49**, 125–145.

Prussia, G.E. and Kinicki, A.J. (1996). A motivational investigation of group effectiveness using social-cognitive theory. *Journal of Applied Psychology*, **81**, 187–198.

Sampson, R.J., Raudenbush, S.W.E. and Earls, F. (1997). Neighborhoods and violent crime: A multilevel study of collective efficacy. *Science*, **277**, 918–924.

Sattler, D.N., Preston, A.J., Kaiser, C.F., Olivera, V.E., Valdez, J. and Schlueter, S. (2002). Hurricane Georges: A cross-national study examining preparedness, resource loss, and psychological distress in the U.S. Virgin Islands, Puerto Rico, Dominican Republic, and the United States. *Journal of Traumatic Stress*, **15**, 339–350.

Schwarzer, R. and Schmitz, G.S. (1999). Collective efficacy of teachers: A longitudinal study in ten German states. *Zeitschrift fur Sozialpsychologie*, **30**, 262–274.

Soliman, H.H. (1996). Community responses to chronic technological disaster: The case of the Pigeon River. *Journal of Social Service Research*, **22**, 89–107.

Solomon, Z., Weisenberg, M., Schwarzwald, J. and Mikulincer, M. (1988). Combat stress reaction and posttraumatic stress disorder as determinants of perceived self-efficacy in battle. *Journal of Social and Clinical Psychology*, **6**, 356–370.

Steinglass, P. and Gerrity, E. (1990). Natural disasters and post-traumatic stress disorder: Short-term versus long-term recovery in two disaster-affected communities. *Journal of Applied Social Psychology*, **20**, 1746–1765.

Wells, J.D., Hobfoll, S.E. and Lavin, J. (1997). Resource loss, resource gain, and communal coping during pregnancy among women with multiple roles. *Psychology of Women Quarterly*, **21**, 645–662.

Zaccaro, S.J., Blair, V., Peterson, C. and Zazanis, M. (1995). Collective efficacy. In: Maddux, J.E. (Ed.), *Self-efficacy, adaptation, and adjustment: Theory, research, and application*, pp. 305–328. Plenum Press, New York.

APPENDIX A

Collective efficacy measure perceptions of CCSE

Think about the following important matters related to the entire community in dealing with a disaster. For each of the following situations, rate how *confident* you are that the community can successfully deal with them. No specific answer is correct.

1	2	3	4	5	6	7
Not well at all		Not too well		Pretty well		Very well

Using the above scale, rate how well you feel the community can handle each situation below *currently*, not as it was the day of the flood or fire.

_____ 1. Ability to quickly coordinate community wide action.
_____ 2. Ability to organize how specific demands facing the community will be addressed across the community.
_____ 3. Ability for organizational structure to delegate responsibility to the most appropriate individuals to meet crisis demands.
_____ 4. Ability of community to identify and respond to individuals in greatest need.
_____ 5. Ability of community to recognize the need for outside support.
_____ 6. Effective utilization of outside resources (physical labor, money, food) that are offered.
_____ 7. Ability to adequately solve conflicts within the community.
_____ 8. Ability of community to successfully respond to a future disaster.
_____ 9. Ability for me to work effectively with others in the community.
_____10. Ability of others within the community to work effectively with me.
_____11. Ability to identify appropriate individuals within the community to lead recovery efforts.
_____12. Ability of community to deal with emotional responses that are part of a disaster.

Note: Utilizing the combined sample of the disaster exposed group and the control group ($n = 63$), a principle-components factor analysis demonstrated a one-factor solution accounting for 70% of the variance (Eigenvalue = 8.39)

APPENDIX B

Means and standard deviations of collective efficacy items

	M	*SD*
Collective efficacy 1	5.75	1.30
Collective efficacy 2	5.40	1.37
Collective efficacy 3	5.60	1.41

Appendix B. (*Continued*)

Collective efficacy 4	5.54	1.35
Collective efficacy 5	5.78	1.45
Collective efficacy 6	5.81	1.22
Collective efficacy 7	5.14	1.41
Collective efficacy 8	5.57	1.39
Collective efficacy 9	5.67	1.38
Collective efficacy 10	5.57	1.33
Collective efficacy 11	5.59	1.60
Collective efficacy 12	4.81	1.32