

## Session No. 29

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**Course Title: Social Dimensions of Disaster, 2<sup>nd</sup> edition**

**Session 29: Disaster Stress**

**1 hr.**

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### **Objectives:**

- 29.1 Explain and illustrate the concept of disaster stress
- 29.2 Discuss at least three types of disaster stress effects on victims
- 29.3 Identify at least four social factors that intensify disaster victim stress effects
- 29.4 Identify at least three types of disaster stress effects on family functioning
- 29.5 Discuss the effects of disaster stress on emergency workers
- 29.6 Identify the steps that comprise a “critical incident stress debrief” (CISD) and “critical incident stress management” (CISM).

### **Scope:**

This session introduces students to the concept of disaster stress, relevant theoretical frameworks, and methodological issues. Stress effects on victims, families, and emergency workers are summarized. Basic principles and approaches to post-stress intervention techniques, including CISD and CISM are summarized and critiqued.

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### **Readings:**

#### *Student Reading:*

Arata, Catalina M., J. Steven Picou, G. David Johnson and T. Scott McNally. 2000. “Coping with Technological Disaster: An Application of the Conservation of Resources Model to the *Exxon Valdez* Oil Spill.” *Journal of Traumatic Stress* 13:23-39.

#### *Professor Readings:*

Peterson, Danny. 2003. “Mitigation of Social Stress from Critical Incidents.” *Journal of Emergency Management* 1 (Spring):19-26.

Willigen, Marieka Van. 2001. "Do Disasters Affect Individual's Psychological Well-Being? An Over-Time Analysis of the Effect of Hurricane Floyd on Men and Women in Eastern North Carolina." *International Journal of Mass Emergencies and Disasters* 19:59-83.

Everly, George S., Jr., Raymond B. Flannery, Jr. and Victoria A. Eyler. 2002. "Critical Incident Stress Management (CISM): A Statistical Review of the Literature." *Psychiatric Quarterly* 73:171-182.

Wagman, David. 2003. "Does Critical Incident Stress Debriefing Work?" *Homeland Protection Professional* 2 (April):42.

Krug, Etienne G., Marcie-jo Kresnow, John P. Peddicord, Linda L. Dahlberg, Kenneth E. Powell, Alex E. Crosby, and Joseph L. Anest. 1999. "Retraction: Suicide After Natural Disasters." *The New England Journal of Medicine* 340:148-149.

*Background References:*

North, Carol S., Laura Tivis, J. Curtin McMillen, Betty Pfefferbaum, Edward L. Spitznagel, Jann Cox, Sara Nixon, Kenneth P. Bunch, and Elizabeth M. Smith. 2002. "Psychiatric Disorders in Rescue Workers After the Oklahoma City Bombing." *American Journal of Psychiatry* 159:857-859.

National Institute of Mental Health. 2002. *Mental Health and Mass Violence: Evidence-Based Early Psychological Intervention for Victims/Survivors of Mass Violence. A Workshop to Reach Consensus on Best Practices.* NIH Publication No. 02-5138. Washington, D.C.: U.S. Government Printing Office. (Accessed April, 2003 at: <http://www.nimh.nih.gov/research/massviolence.pdf>).

Schuster, Mark A., Bradley D. Stein, Lisa H. Jaycox, Rebecca L. Collins, Grant N. Marshall, Marc N. Elliott, Annie J. Zhou, David E. Kanouse, Janina, L. Morrison, and Sandra H. Berry. 2001. "A National Survey of Stress Reactions After the September 11, 2001, Terrorist Attacks." *The New England Journal of Medicine* 345:1507-1512.

Benight, Charles C., Robert W. Freyaldenhoven, Joel Hughes, John M. Ruiz, Tiffany A. Zoschke, and William R. Lovallo. 2000. "Coping Self-efficacy and Psychological Distress Following the Oklahoma City Bombing." *Journal of Applied Social Psychology* 30:1331-1344.

Jenkins, Sharon Rae. 1998. "Emergency Medical Workers' Mass Shooting Incident Stress and Psychological Recovery." *International Journal of Mass Emergencies and Disasters* 16:181-197.

Ginexi, Elizabeth M., Karen Weihs, Samuel J. Simmens and Danny R. Hoyt. 2000. "Natural Disaster and Depression: A Prospective Investigation of Reactions to the 1993 Midwest Floods." *American Journal of Community Psychology* 28:495-518.

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## **General Requirements:**

Overheads (29-1 through 29-10 appended).

See individual requirements for each objective.

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## **Objective 29.1 Explain and illustrate the concept of disaster stress.**

### **Requirements:**

Start this session with student exercise and proceed with lecture material specified below.

Use Overheads 29-1 and 29-2.

### **Remarks:**

I. Introduction.

A. **Exercise.**

1. **Remind** students of exercise procedures.
2. **Divide** class into four groups and assign roles.
  - a. Chair.
  - b. Reporter.
  - c. Timer.

3. **Announce** time limit: 5 minutes.

B. **Display** Overhead 29-1; “Workshop Tasks.”

1. Group 1 – Summarize the “Conservation of Resources” stress model and describe the results obtained in two early studies of disaster impacts.
2. Group 2 – Describe the event selected, research methods used and key limitations of the study by Arata et al. (2000).
3. Group 3 – Summarize the key conclusions reached by Arata et al. (2000) regarding “resource loss” variables and “coping” behaviors.

4. Group 4 – Summarize the key conclusions reached by Arata et al. (2000) regarding disaster impacts on “anxiety,” “depression,” and “posttraumatic stress symptoms.”

C. **Start** discussion.

D. **Stop** discussion.

E. Explain that group reports will be presented later in the session.

II. Disaster stress: start-up exercise.

A. **Ask students:** “Based on your reading, how would you define ‘disaster stress’?”

B. **Record** student responses on the chalkboard.

C. **Ask students:** “OK. We’ll come back to these ideas in a minute, but let’s get some examples. When a disaster victim is experiencing this type of stress, what types of symptoms might they describe?”

D. **Record** student responses on the chalkboard.

E. **Reference** and **integrate** with lecture material below.

III. Disaster stress defined.

A. **Display** Overhead 29-2; “Disaster Stress.”

B. **Stress.**

1. The state of a social system when demands exceed capacity.
2. The social system selected as the **unit of analysis** may vary from individuals, to groups like families, to organizations, communities, or entire societies.
  - a. **Psychologists** typically select individuals or microsystems like groups for study, although some focus on larger and more complex systems like organizations or communities.
  - b. **Sociologists** typically select more complex systems, although some focus on individuals.

C. **Disaster stress.**

1. The state of a social system when **disaster related demands** exceed the capacity.
2. The demand-capacity shift may reflect an increase in demands, a decrease in capacity, or both.
3. **Example:** following a tornado, police, fire, and emergency medical agencies experience a rapid increase in demands for services. Several fire stations have been destroyed by the tornado, resulting in a concurrent loss of capacity.
4. Disaster stress may be **acute**, i.e., sudden or **chronic**, i.e., long standing (e.g., tornado versus a drought).
5. The **social systems** experiencing disaster stress **may vary** from entire organizations, e.g., the fire department in the above example, to individual emergency workers to families and individuals who experience personal or property losses.

#### D. Collective stress.

1. “A collective stress occurs when many members of a social system fail to receive expected conditions of life from the system.” (Barton 1969, p. 38).
2. Concept is used to **integrate** stress research from a wide variety of episodes reflecting both internal and external changes (adapted from Barton 1969, pp. 38-43).
  - a. **Internal sources** include massive social disorganization. Examples include:
    - 1) **Economic failures.**
      - a) Acute depression.
      - b) Widespread riots.
    - 2) **Political breakdowns.**
      - a) Civil disturbances.
      - b) Riots.
      - c) Revolutions.

d) Domestic terrorism.

b. **External sources** include large unfavorable changes in the environment of a social system. Examples include:

- 1) Natural disasters, e.g., hurricane or earthquake.
- 2) Economic disruptions, e.g., loss of markets or of key supplies.
- 3) International terrorism.

#### E. Stressors.

1. **Definition – individual system:** “Events or conditions that may cause physiological and behavioral reactions and present coping difficulties for the individual experiencing them.” (NIMH 2002, p. 27).

2. **Definition – social systems:** Events or conditions that cause a change in the demand-capacity ratio of a social system.

#### 3. Examples.

- a. **Individual level** – tornado is the “stressor” that causes physiological and behavioral reactions.
- b. **Social system level** – tornado is the “stressor” that causes demands for fire department responses to exceed their capacity.
- c. **Explain:** some sociologists will include the individual unit of analysis within the demand-capacity framework while others use definitions similar to that above, i.e., E.1.

#### F. Stress symptoms.

1. Individual level examples (also referred to as “stress reactions”) (adapted from NIMH 2002, p. 27).

- a. **Fatigue.**
- b. **High blood pressure.**
- c. **Anger.**
- d. **Psychological distress.**

2. Social system level examples.
  - a. **Increased environmental monitoring**, e.g., track hurricane (agency); listen to storm warnings (family).
  - b. **Increased communication levels**, e.g., more cross-agency messages (organizations); relatives contact potential victims and offer shelter (family).
  - c. **Increased conflict**, e.g., agency disagreements about who is in charge (community); arguments about when to evacuate and where to go (family).

#### G. Posttraumatic stress disorder (PTSD).

1. “An anxiety disorder (and diagnostic construct used in the *Diagnostic and Statistical Manual of Mental Disorders – IV*) that can develop after exposure to a terrifying event, or ordeal in which grave physical harm occurred or was threatened.” (NIMH 2002, p. 25).
2. **Criteria required for PTSD** (adapted from NIMH 2002, p. 25).
  - a. Exposure to a traumatic event.
  - b. Re-experiencing of the event.
  - c. Persistent avoidance of stimuli associated with the trauma.
  - d. Persistent increased arousal.
  - e. Duration of b,c, or d (above) of more than one month.
  - f. Clinically significant distress or impairment.
3. **Current controversy.**
  - a. PTSD is a **widely used** term within the academic research literature, e.g., assigned Student Reading by Arata et al. (2000), p. 23.
  - b. Numerous measurement indexes have been developed like that used by Arata et al. (2000), p. 27, i.e., the “Symptom Checklist 90 – Revised” published by Derogatis (1992).
  - c. NIMH (2002), Appendix H (pp. 98-99), lists 65 such measures that have been published. Examples include.

- 1) “Child PRI – Child PTSD Reaction Index (Nader et al., 1990).”
- 2) “PSS – Post-traumatic Stress Diagnostic Scale (Foa, 1995).”
- 3) “SCL-90-R Symptom Checklist (Derogatis, 1977)”  
(Note: used by Arata et al. 2000, assigned student reading).
- 4) “SIDES – Structured Interview for Disorders of Extreme Stress (Pelcovitz et al., 1997).”
- 5) “SI - PTSD – Structured Interview for PTSD (Davidson et al., 1997).”

d. **A consensus conclusion.**

- 1) The workshop (adapted from NIMH 2002, p. 1).
  - a) **Sponsor:** National Institute of Mental Health (NIMH).
  - b) **Attendees:** 58 disaster mental health experts from six countries.
  - c) **Date:** October 30 to November 1, 2001.
  - d) **Objective:** “. . . to address the impact of early psychological interventions and to identify what works, what doesn’t work, and what the gaps are in our knowledge.” (p. 1).
- 2) Conclusions:
  - a) “Many survivors experience some symptoms in the immediate aftermath of a traumatic event. These symptoms are **not necessarily** cause for long-term follow-up because, in most cases, they will eventually remit.” (p. 9) (emphasis added).
  - b) “Survivors of traumatic events who do not manifest symptoms after approximately **two months** generally do not require follow-up.” (p. 9) (emphasis added).

## Supplemental Considerations:

The **key messages** of this section are: 1) disasters are commonly viewed as a type of **stressor**; 2) recent research has documented a variety of **stress reactions**, including PTSD; and 3) the existing research base, because of various methodological flaws, has **wide gaps** that **preclude definitive assessment** of the extent, duration, and intensity of disaster caused stress responses within victim populations. Some professors may keep this section **very brief** and use it primarily as an **introduction** to the remaining topics. Others may wish to **expand** the section and the entire session into two or three class sessions. Illustrative measurement scales could be distributed, for example, for student review. Detailed methodological examination could be made through discussion of the weaknesses described in the NIMH (2002), (pp. 8-9) workshop, e.g., discussion of “the gold standard,” i.e., use of randomized, well-controlled clinical trials. Relatively few published studies reflect such criteria.

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### Objective 29.2 Discuss at least three types of disaster stress effects on victims.

#### Requirements:

Use Overhead 29-3.

#### Remarks:

- I. Group reports.
  - A. Group 1 report: 2 minutes.
  - B. **Supplement** group report, as required, with points like these.
    1. “**Conservation of Resources**” (adapted from Arata 2000, pp. 24-25).
      - a. Developed by S.E. Hobfoll (1989).
      - b. A framework for interpreting the impacts of both natural and technological disasters.
      - c. “. . . postulates that people are motivated to obtain, retain, and protect that which they value.” (p. 24).
      - d. “. . . any event which results in actual or perceived loss of resources, or a lack of expected resource gain, will produce psychological stress” (p. 25).
    2. **Prior study applications.**

- a. Kaiser et al. 1996 (adapted from Arata 2000, p. 25).
  - 1) **Event:** impacts of Hurricane Hugo in 1989.
  - 2) **Method:** college students in Charleston, South Carolina tested four week after disaster.
  - 3) **Conclusion:** “. . . resource loss and depression accounted for the greatest portion of variance in psychological distress.” (p. 25).
  
- b. Freedy et al. 1994 (adapted from Arata 2000, p. 25).
  - 1) **Event:** impacts of 1991 Sierra Madre earthquake impacts.
  - 2) **Method:** unspecified sample of victims from Los Angeles County.
  - 3) **Conclusion:** “. . . resource loss was a significant predictor of psychological distress, even when controlling for demographic variables and trauma history.” (Arata 2000, p. 25).

C. Group 2 report: 2 minutes.

D. **Supplement** group report, as required, with points like these.

- 1. **Event studied** (adapted from Arata 2000, p. 25).
  - a. *Exxon Valdez* ran aground a reef in Prince William Sound, Alaska.
  - b. Date: March 24, 1989.
  - c. Largest oil spill in U.S. history.
  - d. Long term ecological impacts.
  - e. Economic losses to commercial fishers during two year period, estimated at \$155 million.
  
- 2. **Research methods** (adapted from Arata 2000, p. 27).

- a. Questionnaire mailed to members of Cordova District Fisherman United; 28% return rate; n = 125 (usable schedules for analysis).
  - b. Reflecting the study universe, most responders were male (86%), white (91%), and married (70%).
3. **Study limitations** (adapted from Arata 2000, p. 36).
- a. Self-report data may be exaggerated.
  - b. Respondents were aware of **ongoing litigation**, however, “. . . all criminal and civil litigation, except for appeals, had been completed at the time of our data collection.” (p. 36).
  - c. Internal validity issues, i.e., could the symptom rates measured have been impacted by other variables (not the oil spill)?
  - d. External validity issues, i.e., to what other communities and events can the results be generalized?
  - e. “Due to the use of a cross-sectional design, the direction of causation can only be guided by the COR framework and not empirically verified.” (p. 37).

II. Prior research on disaster stress impacts.

A. **Erikson (1976) study.**

1. **Assisted attorneys** seeking restitution for victim families.
2. **Event:** flash flood; dam failure.
3. **Location:** Buffalo Creek, West Virginia.
4. **Date:** February 26, 1972.
5. **Consequences:** 118 killed; 4,000 homeless.
6. **Conclusions:** “Some 615 survivors of the Buffalo Creek flood were examined by psychiatrists a year and a half after the event in connection with the legal action described earlier, and at least 570 of them, a grim 93 percent, were found to be suffering from an identical emotional disorder.” (Erikson 1976, pp. 156).

B. **Follow-up studies in Buffalo Creek.**

1. Glesser et al. (1978) concluded that two years after the flood adult survivors “. . . continued to suffer from symptoms of anxiety, depression and hostility—belligerence with social isolation, disruption of daily routine . . .” (p. 216).
2. Green et al. (1990) conducted long-term follow-up surveys, 10 years after the flood, and documented pronounced stress effects.

**C. Common study criticisms.**

1. Variables like “trauma” and “dread” are not well measured.
2. No control groups have been used.
3. No pre-event data have been available.
4. Litigation context may cause interviewee bias.
5. Study of a single event, impacting a single community, precludes any basis for generalization to other events or locations (external validity).

**III. Stress effects: example framework.**

**A. Critical Incident Stress Syndrome (CISS),**

**B. “. . . a broad concept** used to describe collective signs, symptoms, and various maladaptive manifestations following exposure to a critical incident.” (Peterson 2003, p. 20).

**C. Concept developed** and promoted by Jeffrey T. Mitchell, George S. Everly, Jr. and others. Everly is Chairman Emeritus, International Critical Incident Stress Foundation (NIMH 2002, p. ii).

**D. Display** Overhead 29-3; “CISS Framework”.

**E. CISS reflects** four types of responses (adapted from summary by Peterson 2003, p. 20; based on material published by the International Critical Incident Stress Foundation).

**1. Physical signs and symptoms.**

- a) Chills.
- b) Thirst.

- c) Nausea.
- d) Dizziness.
- e) Chest pain.
- f) High blood pressure.
- g) Profuse sweating.
- h) Difficulty breathing.
- i) Others.

**2. Cognitive signs and symptoms.**

- a) Confusion.
- b) Nightmares.
- c) Suspiciousness.
- d) Lack of attention and ability to make decisions.
- e) Poor problem solving.

**3. Emotional signs and symptoms.**

- a) Fear.
- b) Guilt.
- c) Grief.
- d) Panic.
- e) Irritability.
- f) Depression.
- g) Emotional outbursts.
- h) Others.

**4. Behavioral signs and symptoms.**

- a) Withdrawal.
- b) Antisocial acts.
- c) Inability to rest or sleep.
- d) Loss or increase in appetite.
- e) Others.

IV. Implications for emergency managers.

A. Minimal **awareness** of research studies is **required** to keep **assumed** disaster stress effects in perspective.

B. **Awareness** is required of parallel studies that concluded **few if any** long-term impacts. Examples include:

1. Mileti et al. 1984.

- a. **Event:** Three Mile Island incident in March, 1979.
- b. **Method:** Data collected included cardiovascular deaths, suicides, psychiatric admissions, alcohol sales, crime rates, etc.
- c. **Conclusion:** “. . . the unobtrusive indicators of stress included in this study suggest that stress as manifested in changed human behavior at the population-level was slight, short-lived and not beyond levels typically experienced in a human population during annual events that typically induce stress, for example, the Christmas holidays (pp. 108-109).

2. Baisden 1979.

- a. **Reviewed** 10 study reports.
- b. **Conclusion:** “Victim populations do seem to undergo considerable stress and strain and do experience varying degrees of concern, worry, depression, anxiety, together with numerous problems in living and adjusting in time to disaster. . . except for the Buffalo Creek study, none of the research found a link between disaster and severe psychopathology.” (p. 328).

C. **Minimal awareness** of the **methodological limitations** reflected in most studies is required, e.g., as noted above, i.e., II.C. above.

D. **Be aware** of study **retractions**: Example – suicide.

1. 1998 study published in *The New England Journal of Medicine* received widespread media coverage (Krug et al. 1998).
2. **Key conclusion**: disasters cause increases in suicide rates.
3. In 1999, a **retraction** was published which **unfortunately** received **less media coverage**.
4. **Revised conclusions** (Krug et al. 1999).
  - a. “We regretfully report that we have discovered an error in computer programming and that our previous results are incorrect.” (p. 148).
  - b. “The new results for counties affected by a single natural disaster **do not support** the hypothesis that suicide rates increase after natural disasters.” (p. 148) (emphasis added).

**Supplemental Considerations:**

The **key message** of this section is that a wide variety of **stress effects** have been attributed to disasters and other types of “critical incidents.” Some professors will keep the section **brief** and review only the basics. Others may wish to **expand** on the range of study criticisms and methodological issues. Others will **emphasize** the growing body of research publications documenting extensive or lasting effects, **despite** study weaknesses.

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**Objective 29.3 Identify at least four social factors that intensify disaster victim stress effects.**

**Requirements:**

Use Overheads 29-4 and 29-5.

**Remarks:**

- I. Introduction.
  - A. Group 3 report: 2 minutes.
  - B. Group 4 report: 2 minutes.
- II. Arafa et al. (2000) study (assigned Student Reading).

A. **Following** group reports, supplement, as required, with elaborations like the following.

B. **Display** Overhead 29-4; “Social Factors That Constrain Disaster Stress Symptoms.”

C. **Resource loss-objects.**

1. Refer students to Table 2, p. 32.
2. Four types of **potential losses** were examined, e.g., damage to Prince William Sound.
3. **Only one factor** (having to sell possessions) was significantly correlated to anxiety ( $r = .23$ ), depression ( $r = .26$ ), and CR-PTSD ( $r = .24$ ) (p. 32).

D. **Resource loss – conditions.**

1. Refer students to Table 2, p. 32.
2. Five types of **potential losses** were examined, e.g., perceived negative changes in relationships with relatives or at work.
3. **Eleven of the 15 relationships** were statistically significant, e.g., negative change in relationships with relatives was correlated with anxiety ( $r = .28$ ), depression ( $r = .37$ ), and CR-PTSD ( $r = .32$ ).

E. **Response loss – energies.**

1. Refer students to Table 2, p. 32.
2. Five types of **potential losses** were examined, e.g., income loss spiral and investment without gain.
3. **Eight of the 15 relationships** were statistically significant, especially losses related to a downward spiral in income and investments without gain, e.g., income loss was correlated with anxiety ( $r = .27$ ), depression ( $r = .24$ ) and CR-PTSD ( $r = .24$ ).

F. **Coping behavior.**

1. Refer students to Table 2, p. 32.
2. Three forms of **coping behavior** were examined and **all were correlated significantly** with the three stress symptom measures, e.g.,

“emotional containment/passivity” was correlated with anxiety ( $r = .47$ ), depression ( $r = .57$ ) and CR-PTSD ( $r = .55$ ).

### G. Multivariate analyses.

1. Refer students to Table 3, p. 33.
2. **Anxiety model** ( $R^2 = .416$ ), i.e., 42 percent of the variance in anxiety symptoms was accounted for by the following social factors.
  - a. Relations with non-relatives.
  - b. Investment without gain.
  - c. Emotional containment/passivity.
  - d. Emotional expressive/social.
  - e. Support seeking.
3. **Depression model** ( $R^2 = .468$ ).
  - a. Relations with non-relatives.
  - b. Changes in physical health.
  - c. Emotional containment/passivity.
4. **Posttraumatic stress symptom model** (CR-PTSD) ( $R^2 = .457$ ).
  - a. Relations with non-relatives.
  - b. Changes in physical health.
  - c. Emotional containment/passivity.

### III. Related disaster stress research.

#### A. Note caution.

1. Numerous studies have been completed, but **nearly all** reflect **serious** methodological weaknesses.
2. **Remind** students of the report by Group 2 regarding basic weaknesses in the Arata et al. (2000) study.

B. **Display** Overhead 29-5: “Social Factors That Intensify Disaster Stress.”

C. **Review** factors listed and summarize relevant research studies (see Drabek 1986, pp. 265-272 for additional research study summaries).

D. **Event characteristics.**

1. **Intensity.**

a. **Example:** Gleser et al. 1981.

b. **Event:** flash flood, Buffalo Creek, West Virginia, February 26, 1972.

c. **Conclusions:**

1) “Over one-half the sample had lost someone at least as close to them as a dear friend, and more than a fourth had lost one or more extended family members.” (p. 45).

2) “Approximately 42% of the men and 32% of the women had come close to death themselves or watched helplessly while others they knew were carried to their death.” (p. 45).

2. **Intentionality.**

a. **Example:** Schuster et al. 2001.

b. **Event:** terrorist attack, World Trade Center, Pennsylvania, and Pentagon air crashes, September 11, 2001.

c. **Conclusions:**

1) “People who are not present at a traumatic event may experience stress reactions.” (p. 1507).

2) Nationally representative sample was interviewed three to five days after the attacks (n = 560 adults); 44% reported one or more substantial symptoms of stress; 90% had one or more symptoms “at least to some degree” (p. 1507).

E. **Pre-event vulnerabilities.**

1. **Income** (lower).

a. **Example:** Ginexi et al. 2000.

b. **Event:** 1993 Midwest floods.

c. **Conclusions:**

- 1) Statewide sample of Iowa residents interviewed one year **prior to** and 30 to 90 days **after** (n = 1735) (p. 495).
- 2) Increase in symptoms was greatest among victims with lowest incomes (also those residing in small rural communities) (p. 495).

2. **Age** (younger).

a. **Example:** Siegel et al. 1999.

b. **Event:** 1994 Northridge Earthquake (California).

c. **Conclusions:**

- 1) Three community samples; 7 months (1 sample, n = 506) and one year after quake (2 samples, n = 96 and 1,247) (p. 272).
- 2) Increase in traumatic stress symptoms among younger victims, i.e., 37 years or less (p. 284).

3. **Gender** (female).

a. **Example:** Willigen 2001.

b. **Event:** Hurricane Floyd, 1999, North Carolina.

c. **Conclusions:**

- 1) Two samples from eastern North Carolina (pre-Floyd, n = 712; post-Floyd, 2 to 8 weeks after, n = 406) (p. 65).
- 2) “While women’s well-being decreased an average after the hurricane, men’s perceptions of social support and sense of having a purpose to their lives increased.” (p. 59).

4. **Martial status** (single).

a. **Example:** Siegel et al. 1999.

b. **Event:** 1994 Northridge Earthquake (California).

c. **Conclusions:**

- 1) Three community samples; 7 months (1 sample, n = 506) and one year (2 samples, n = 96 and n = 1,247) after quake (p. 272).
- 2) Increase in traumatic stress symptoms among unmarried (p. 291).

5. **Level of distress.**

a. **Example:** Benight et al. 2000.

b. **Event:** terrorist attack, bombing of Alfred P. Murrah Federal Building, Oklahoma City, Oklahoma (April 19, 1995).

c. **Conclusions:**

- 1) 27 victims interviewed 2 months after the bombing with a mailed questionnaire one year later (17 of the 27 returned).
- 2) Victims with higher levels of coping skills (less prevent distress) had lower experiences of distress, i.e., PTSD symptom frequency and severity (p. 1337).

F. **Post-event support.**

1. **Community recovery.**

a. **Example:** Haines et al. 1999.

b. **Event:** Hurricane Andrew, August, 1992.

c. **Conclusions:**

- 1) 594 telephone interviews conducted with residents of two adjacent southwestern Louisiana parishes one to three months afterwards.

- 2) “We found that only instrumental forms of support ameliorate short-term psychological distress.” (p. 385).

## 2. Family support.

a. **Example:** Arata et al. 2000.

b. **Event:** oil spill in Prince William Sound, Alaska; *Exxon Valdez*.

c. **Conclusions:**

- 1) Remind students of key findings discussed earlier in the session.
- 2) Refer students to Table 2, p. 32, wherein the impact of perceived negative changes in relationships with relatives was correlated with anxiety, depression, and CR-PTSD.

### Supplemental Considerations:

The **key messages** of this section are: 1) much research has been completed that collectively documents **social factors** that **intensify** disaster stress and 2) lack of precision and numerous other **methodological weaknesses** preclude specificity of **findings and the** range of generalization. Some professors may choose to focus only on the assigned Student Reading, while many may **briefly review** the factors listed on Overhead 29-5. Some may **expand** this section greatly and use the referenced studies, plus others, to highlight the variety of **methodological issues** inherent in the requisite future research agenda.

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### Objective 29.4 Identify at least three types of disaster stress effects on family functioning.

#### Requirements:

Use Overhead 29-6.

#### Remarks:

I. Studies of family functioning.

A. Drabek and Key 1984.

1. **Event:** tornado, 1966, Topeka, Kansas.

2. **Design:** pre-event and post-event interview data with multiple samples of victim and non-victim families. Time one data were collected about one year prior to the tornado and time two interviews occurred three years afterwards.
3. **Remind** students of Session 13 entitled “Disaster Research Methods” wherein the quasi-experimental design of this study was described in the assigned student reading, i.e., Drabek 2002.
4. Study results are summarized below (section II).

B. Bolin 1982.

1. **Event:** tornado, 1979, Wichita Falls and Vernon, Texas.
2. **Design:** samples of victims and non-victims were interviewed shortly after the tornado and again six months later (n = 410).
3. **Conclusions:** results validated those reached by Drabek and Key (1984) which are summarized below.

II. Disaster stress effects on family functioning.

A. **Display** Overhead 29-6; “Disaster Stress Effects on Family Functioning”; briefly review the conclusions below (adapted from Drabek and Key 1984, p. 367).

B. **Interaction with relatives** (increased).

1. “Kin linkages, however, were changed. Most affected were victim perceptions of relatives as resources to be used when future family problems or money problems might occur.”
2. “While shifts in interactional and exchange transaction data were inconsistent, the overall pattern was clear. These bonds were much tighter. Here the tornado’s imprint was most evident.”

C. **Interaction with neighbors** (decreased).

1. “Their bonds to neighbors were weakened, however.”
2. “We thought this might be a reflection of relocation—that is, many did have to move into a different house. Clearly that was a factor in the reduction of neighbor bonding. Yet, even among those who did not

relocate, there was evidence of dampened involvement with and commitment to neighbors.”

**D. Interaction with friends** (increased).

1. Regardless of their socioeconomic status, a slightly larger proportion of families victimized by the tornado had tighter linkages to groups of friends.”
2. Increased interaction with and commitment to friends was significantly less than that which occurred with relatives.

**E. Participation in voluntary associations** (decreased).

1. “There was a slight deterioration in their participation in a wide variety of social and civic groups, ranging from lodges and fraternal organizations, to hobby groups and those oriented toward political action.”
2. Secondary associations, like neighbors, became less frequent interaction points three years after the tornado.

**F. Church attendance** (increased).

1. “Only tentacles leading to one type of voluntary association seemed untouched. Indeed, it—the church—appeared to have become more central.”
2. “More victims reported church affiliation; and among those indicating membership, victims reported more frequent attendance.”

**G. Therapeutic community** (increased).

1. “. . . those whose recovery from this tornado was facilitated through larger numbers of help sources, three years afterwards reported intensified social solidarity.”
2. “For the most part, both their personal and their social systems appeared to have been strengthened by the experience.”

**Supplemental Considerations:**

The **key message** of this section is to focus student attention of the effects of disaster on **social systems**, like families. The **bulk of the literature** to date, as noted in the prior section, has been focused on **psychological** or individual stress symptom patterns. When family impacts have been assessed, e.g., in the Arata et al. (2000) study, these qualities

were used as control variables. That is, changes in relationships with family members **were not viewed as dependent variables** worthy of study, but as factors that might increase the PTSD symptom pattern. **Future research studies** are required to assess a broad range of **family functioning impacts**, both internal, e. g., husband-wife relationships, and external, e.g., kin interaction patterns.

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**Objective 29.5 Discuss the effects of disaster stress on emergency workers.**

**Requirements:**

Use Overhead 29-7.

**Remarks:**

- I. Effects of disaster stress on emergency workers.
  - A. **Explain** Hartsough (1985) research review.
    1. Extensive literature review of research studies.
    2. Effects documented are commonly used by mental health practitioners as **justification for intervention**.
  - B. **Display** Overhead 29-6; “Effects of Disaster Stress on Emergency Workers.”
  - C. **Review** and illustrate each point listed.
    1. **Inadequate resolution of trauma.**
      - a. “Traumatic stress had several sources. In emergency work, a common source is exposure to death and injury, especially if the incident involves gruesome or bizarre stimuli such as the grisly appearance of bodies or a horrifying means of death.” (p. 49).
      - b. “Multiple deaths, or intense and long-lasting exposure to the death scene, are related factors.” (p. 49).
      - c. Other sources of traumatic stress are exhaustion or injury on the part of the worker, or life-threat to a fellow worker. (p. 49).
      - d. “Threats to self may be physical, or they may be threats to self-esteem, as when a worker judges his or her own performance to fall short of standard, and a civilian’s life is jeopardized or lost.” (p. 45).

- e. “. . . the recovery role is in conflict with the role of emergency worker. To be more specific, the role of emergency worker is defined and carried out in such a way as to be maximally consistent with the worker’s needs when actually performing in an emergency. However, when the context changes from emergency scene to the recovery-from-trauma scene, these same defining characteristics conflict with what is necessary to play out the recovery role.” (p. 50).

## 2. Symptom patterns.

- a. **Example:** body recovery following a DC-10 crash on Mt. Erebus (summarized by Hartsough 1985, p. 51).
- b. **Sample:** 180 workers studied.
- c. **Conclusions:**
  - 1) 81% reported sleep disturbances; 76% reported changes in appetite; 49% reported “changes in their feelings” (p. 51).
  - 2) “By the time of follow-up 20 months later, these changes had reverted to the norm; in the interim, five of the workers had discussed their reactions with friends, three with physicians, two with psychiatrists, and three with social workers.” (p. 51).

## 3. Individual barriers to resolution.

- a. “. . . some of the behaviors, beliefs, and attitudes associated with the emergency worker role facilitate emergency work but impede recovery from traumatic stress” (p. 52).
- b. Specific such behaviors include (p. 52).
  - 1) Task-and-tool orientation precludes discussion of feelings during response.
  - 2) Desire to maintain image of self-control.
  - 3) Reluctance to inflict stories of pain and suffering, including their own, on others.
  - 4) High expectations for success.

4. **Organizational barriers to resolution** (p. 54).

- a. Absence of standard procedure for psychological debrief.
- b. Poor relationships between emergency organizations and community mental health resources.

II. Additional research examples.

A. Jenkins (1998).

1. **Event:** October, 1991; gunman crashed truck into a crowded cafeteria restaurant during lunch hour in Killeen, Texas; shot numerous patrons; after being shot by police, he fatally shot himself.
2. **Study sample:** fire and rescue workers (n = 36).
3. **Procedure:** interviews conducted about one week after event with a follow-up interview one-month later (p. 184).
4. **Immediate stress effects:** anxiety/worry – 28%; anger/hostility – 22%; sleep disturbances – 22%; obsessive-compulsive preoccupations – 19%.
5. **Social support.**
  - a. Coworkers were most common – 94%.
  - b. Counselors were used by 50%.
  - c. A few participated in a Critical Incident Stress Debriefing (CISD) – 25% (n = 9).

B. North et al. (2002).

1. **Event:** Oklahoma City Bombing, April, 1995, Alfred P. Murrah Federal Building (168 deaths and 674 injured).
2. **Study samples:** Oklahoma City Fire Department rescue personnel (n = 165) and Tinker Air Force Base Fire Department rescue personnel (n = 16) who volunteered for the study were contrasted to an all-male victim data base (n = 88).
3. **Procedures:** interviews were conducted during a 27 month period (delayed because of death of the original principal investigator); victim

data base was created approximately 34 months after the bombing (see North et al. 1999).

**4. Results:**

- a. “The rate of posttraumatic stress disorder related to the bombing was significantly lower in male rescue workers (13%, n = 11) than in male primary victims (23%, n = 20).” (p. 858).
- b. “Preexisting psychopathology strongly predicted general postdisaster psychopathology.” (p. 859).
- c. “Nearly one-half of the firefighters qualified for a lifetime diagnosis of alcohol abuse/dependence, which generally predated the disaster.” (p. 859).
- d. “Most postdisaster psychiatric disorders were alcohol-related, leaving only 12% with other disorders along.” (p. 859).

C. McMahon (2001).

1. **Events:** journalists who reported on a variety of traumatic events, e.g., wars (3); bank robberies (10); riots (11); natural disasters (13); fires (16), etc. (p. 52).

**2. Study samples:**

- a. “trauma group”: n = 32, i.e., “. . . journalists reporting on traumatic stories in last three years” (p. 52).
- b. “Contrast group”: n = 25, i.e., “. . . journalists who had not reported on trauma in the last three years.”

**3. Procedures.**

- a. Some questionnaires were hand delivered to journalists at major Melbourne (Australia) newspapers while others were mailed.
- b. Questionnaire items included measures of somatic symptoms, anxiety, depression, etc. (“General Health Questionnaire”) and intrusion and/or avoidance of events (“Impacts of Events Scale”).

**4. Results:**

- a. Journalists “. . . experienced significant levels of intrusive images and thoughts at the time of reporting on a traumatic story.” (p. 52). (also forms of avoidance behavior).
- b. “There was however a decrease in overall impact scores of the traumatic event as time distance from the trauma increased.” (p. 52).
- c. “A large majority of the journalists surveyed experienced the intrusiveness, avoidance and depression symptoms between one and three years following reporting on the traumatic story.” (p. 53).
- d. Social factors that intensified stress symptoms were: (p. 55)
  - 1) Gender (females had more anxiety and insomnia).
  - 2) Age (mixed, i.e., older experienced intrusive thoughts and avoidance behavior; younger experienced more anxiety and insomnia).
  - 3) Marital status (singles experienced more social dysfunction).

### Supplemental Considerations:

The **key messages** of this section are: 1) emergency workers often experience **short-term** stress effects and 2) the **extent** of such effects, and especially the effectiveness of intervention modalities are not well researched or understood. Some professors may choose to **limit** this section to a brief review of the key points highlighted on the overhead (29-7) while others may **expand** this section greatly through detailed discussion of the related research and/or new research design potentials. Students could be **challenged** by such **questions** as these. “Following an event like the Oklahoma City bombing, what types of research studies could you recommend?” “What would be the value of multi-event studies, wherein hurricane victims and emergency workers might be contrasted to those from a place like Oklahoma City after the 1995 bombing event?” “What about studies that allow for multiple data collections over a two or three year time period?” “Professional journalists rarely have been studied. What other occupational groups might experience disaster stress?”

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**Objective 29.5 Identify the steps that comprise a “critical incident stress debrief” (CISD) and “critical incident stress management” (CISM).**

### Requirements:

Use Overheads 29-8 through 29-10.

**Remarks:**

I. Six steps in CISD.

A. **CISD.**

1. Definition: critical incident stress debrief.
2. Author and promoters: Jeffrey T. Mitchell and George S. Everly.
3. Numerous publications, workshops, and the Critical Incident Stress Foundation.

B. **Display** Overhead 29-8; “CISD: Six Steps” (adapted from Mitchell, 1985).

1. **Introductory phase.**

- a. Introduction of facilitator.
- b. Outline confidentiality requirements.
- c. Explain purpose of session.

2. **Fact phase.**

- a. Group members discuss activities they performed at incident.
- b. Discussion of experience, i.e., what was seen, smelled, heard.

3. **Feeling phase.**

- a. Members describe feelings they recall having at the scene.
- b. Members describe feelings currently held.
- c. Members discuss whether they had feelings like this before.

4. **Symptom phase.**

- a. Members share psychological after effects.
- b. Members share physical after effects.

5. **Teaching phase.**

- a. Symptoms are normal responses.
- b. Incident reflected extraordinary circumstances.
- c. Stress-response syndrome summarized.

**6. Re-entry phase.**

- a. Member questions answered.
- b. Group plan of action, if desired.

**II. Forms of stress intervention.**

**A. Display** Overhead 29-9; “Forms of Stress Intervention.”

**B. Adapted** from Peterson (2003, pp. 21-22) who has summarized Mitchell and Everly (2000).

**C. Individual interventions.**

1. On-scene support.
2. General stress management education.
3. Mental preparedness training.
4. Individual crisis intervention support.
5. Referrals for psychotherapy.

**D. Group interventions.**

1. Pre-incident education.
2. Defusings.
3. Demobilizations during disaster operations.
4. CIS debriefing.
5. Follow-up meetings.

**E. Environment interventions.**

1. Community outreach.
2. Support for families.
3. Organizational support (e.g., consultations to management).

### III. Efficacy of interventions.

#### A. **CISM works** (Everly et al. 2002).

1. Research on “critical incident stress management” (CISM) was reviewed (8 studies).
2. CISD is a single intervention component of a more comprehensive crisis intervention program referred to as CISM (Everly et al. 2002, p. 174).
3. **Display** Overhead 29-10; “CISM: Seven Steps”.
  - a. Preincident education/mental preparedness training.
  - b. Individual crisis intervention.
  - c. Demobilization after disaster or large-scale event.
  - d. Defusing or brief small group discussions.
  - e. CIS debriefing or longer small group discussion (Mitchell’s CISD).
  - f. Family crisis intervention procedures.
  - g. Referrals for follow-up assessment or treatment.
4. **Explain** the relationship of CISD to CISM (CISD is step 5 within CISM).
5. “Pooling all study outcomes utilizing the CISM model of crisis intervention yielded a significant . . . beneficial outcome associated with the utilization of the CISM system.” (p. 179).
6. **Conclusion:** “Although these interventions appear to be efficacious, additional research is needed to refine the CISM approach. Studies to date have been naturalistic and a true randomized controlled study is needed.” (p. 180).

**B. Example critic** (Wagman 2003).

1. **Cites practitioner** – Captain, Peoria, Arizona Fire Department (also chair of public safety program – Grand Canyon University).
  - a. “Going fishing might be a better stress-management tool than CISM . . .” (p. 42).
  - b. “. . . formal debriefing (was) last on the list of stress-management tools firefighters said they would choose.” (p. 42k).
  - c. Instead of formal debriefs, firefighters “. . . turned to ‘intuitive’ sources of support, including family, co-workers, clergy and exercise.” (p. 42).
2. **Reviews/research summaries.**
  - a. *Lancet* (British medical journal) published critique of CISD, i.e., “Despite the intuitive appeal of the technique, our results show the CISD has no more efficacy in reducing symptoms of . . . traumatic related symptoms, and in fact suggest that it has a detrimental effect.” (p. 42).
  - b. Woodall, S. Joseph (chair of public safety program, Grand Canyon University), “I was an advocate of CISM, but as I followed the science and found the truth, I realized it’s not the answer.” (p. 42).

**C. Example research** (Benight et al. 2000).

1. **Remind students** of discussion of victim study following Oklahoma City bombing (see Objective 29.3, III.E.5).
2. **Study documented** that victims with higher levels of coping skills had lower levels of post-event distress.
3. **Authors conclude:** “. . . some at-risk individuals feeling more distress when asked to discuss in detail his or her experience with the tragedy . . . further exacerbate self-appraisals of inability to cope.” (p. 1342).

**D. Current consensus.**

1. **Remind** students of discussion of NIMH Workshop (2002). (See Objective 29-1, III.G.D.).

2. “**There is limited Level 1 evidence to definitely confirm or refute the effectiveness of any early psychological intervention following mass violence and disasters.**” (p. 8).
3. **Remind** students that “Level 1 evidence” refers to randomized, well controlled clinical trials (p. 8).
4. “There is some Level 1 evidence for the effectiveness of early, brief, and focused psychotherapeutic intervention (provided on an individual or a group basis) for reducing distress in bereaved spouses, parents, and children.” (p. 8).
5. “There is some Level 1 evidence suggesting that early intervention in the form of a single one-on-one recital of events and expression of emotions evoked by a traumatic event (as advocated in some forms of psychological debriefing) **does not consistently reduce risks** of later developing PTSD or related adjustment difficulties.” (p. 8) (emphasis added).
6. “Some survivors (e.g., those with high arousal) may be put at **heightened risk for adverse outcomes** as a result of such early interventions.” (p. 8) (emphasis added).

### Supplemental Considerations:

The **key messages** of this section are: 1) there are forms of intervention, especially CISD and CISM that have attracted many **advocates** and 2) evidence of efficacy remains lacking. Future **emergency managers** are required to be versed in these techniques since most large **disasters will be accompanied** by specialists who will propose intervention. Depending on the event, community culture, and desire for emergency workers and victims to **volunteer** to participate in intervention programs, the emergency manager must **seek to balance risks** with potential **benefits**. Some professors will prefer to keep this section very brief and limit presentation to material on the overheads. Other professors may wish to greatly **expand** this section through extended discussion and/or a class exercise on future research needs.

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### Course Developer References:

- I. Arata, Catalina M., J. Steven Picou, G. David Johnson and T. Scott McNally. 2000. “Coping with Technological Disaster: An Application of the Conservation of Resources Model to the *Exxon Valdez* Oil Spill.” *Journal of Traumatic Stress* 13:23-39.
- II. Baisden, Barbara. 1979. “Crisis Intervention in Smaller Communities.” Pp. 325-332 in *The Small City and Regional Community, Proceedings of the Second*

- Conference*, edited by E.J. Miller and R.P. Wolensky. Stevens Point, Wisconsin: Foundation Press, Inc., University of Wisconsin.
- III. Barton, Allen H. 1969. *Communities In Disaster*. Garden City, New York: Doubleday and Company, Inc.
  - IV. Benight, Charles C., Robert W. Freyaldenhoven, Joel Hughes, John M. Ruiz, Tiffany A. Zoschke, and William R. Lovallo. 2000. "Coping Self-efficacy and Psychological Distress Following the Oklahoma City Bombing." *Journal of Applied Social Psychology* 30:1331-1344.
  - V. Davidson, J.R.T., M.A. Malik, and J. Travers. 1997. "Structured Interview for PTSD: Psychometric Validation for DSM-IV Criteria." *Depression and Anxiety* 5:1-3 (as cited in NIMH 2002, p. 101).
  - VI. Derogatis, L.R. 1977. *SCL-90-R: Administration, Scoring and Procedures Manual-II*. Towson, MD: Clinical Psychometric Research (as cited in NIMH 2002, p. 102).
  - VII. Drabek, Thomas E. 1986. *Human Responses to Disaster: An Inventory of Sociological Findings*. New York: Springer-Verlag.
  - VIII. Drabek, Thomas E. and William H. Key. 1984. *Conquering Disaster: Family Recovery and Long-Term Consequences*. New York: Irvington Publishers.
  - IX. Erikson, Kai. 1976. *Everything In Its Path*. New York: Simon and Schuster.
  - X. Everly, George S., Jr., Raymond B. Flannery, Jr. and Victoria A. Eyler. 2002. "Critical Incident Stress Management (CISM): A Statistical Review of the Literature." *Psychiatric Quarterly* 73:171-182.
  - XI. Foa, E.B. 1995. *Posttraumatic Stress Diagnostic Scale*. Minneapolis, MN: National Computer Systems, Inc. (as cited in NIMH 2002, p. 103).
  - XII. Freedy, J.R., M.E. Saladin, D.G. Kilpatrick, H.S. Resnick, and B.,E. Saunders. 1994. "Understanding Acute Psychological Distress Following Natural Disaster." *Journal of Traumatic Stress* 7:257-273.
  - XIII. Ginexi, Elizabeth M., Karen Weihs, Samuel J. Simmens and Danny R. Hoyt. 2000. "Natural Disaster and Depression: A Prospective Investigation of Reactions to the 1993 Midwest Floods." *American Journal of Community Psychology* 28:495-518.
  - XIV. Gleser, Goldine C., Bonnie L. Green, and Carolyn N. Winget. 1978. "Quantifying Interview Data on Psychia Impairment of Disaster Survivors." *Journal of Nervous and Mental Disease* 166:209-216.

- XV. Green, Bonnie L., Jacob D. Lindy, Mary C. Grace, Goldine C. Gleser, Anthony C. Leonard, Mindy Koral, and Carolyn Winget. 1990. "Buffalo Creek Survivors in the Second Decade: Stability of Stress Symptoms." *American Journal of Orthopsychiatry* 60:43-54.
- XVI. Haines, Valerie A., Jeanne S. Hurlbert, and John J. Beggs. 1999. "The Disaster Framing of the Stress Process: A Test of an Expanded Model." *International Journal of Mass Emergencies and Disasters* 17:367-397.
- XVII. Hartsough, Don M. 1985. "Emergency Organization Role." PP. 45-85 in *Role Stressors and Supports For Emergency Workers*. Rockville, Maryland: Center for Mental Health Studies in Emergencies, National Institute of Mental Health.
- XVIII. Hobfoll, S.E. 1989. "Conservation of Resources: A New Attempt at Conceptualizing Stress." *American Journal of Community Psychology* 9:91-103 (as cited in Arata et al. 2000, p. 39).
- XIX. Jenkins, Sharon Rae. 1998. "Emergency Medical Workers' Mass Shooting Incident Stress and Psychological Recovery." *International Journal of Mass Emergencies and Disasters* 16:181-197.
- XX. Kaiser, C.F., D.N. Sattler, D.R. Bellack, and J. Dersin. 1996. "A Conservation of Resources Approach to a Natural Disaster: Sense of Coherence and Psychological Distress." *Journal of Social Behavior and Personality* 11:459-476 (as cited in Arata et al. 2000, p. 39).
- XXI. Krug, Etienne G., Marcie-jo Kresnow, John P. Peddicord, Linda L. Dahlberg, Kenneth E. Powell, Alex E. Crosby, and Joseph L. Annest. 1998. "Suicide After Natural Disaster." *The New England Journal of Medicine* 338:373-378.
- XXII. Krug, Etienne G., Marcie-jo Kresnow, John P. Peddicord, Linda L. Dahlberg, Kenneth E. Powell, Alex E. Crosby, and Joseph L. Annest. 1999. "Retraction: Suicide After Natural Disasters." *The New England Journal of Medicine* 340:148-149.
- XXIII. McMahon, Cait. 2001. "Covering Disaster: A Pilot Study into Secondary Trauma for Print Media Journalists Reporting on Disaster." *Australian Journal of Emergency Management* 16 (Winter):52-56.
- XXIII. Mileti, Dennis S., Donald M. Hartsough, Patti Madson and Rick Hufnagel. 1984. "The Three Mile Island Incident: A Study of Behavioral Indicators of Human Stress." *International Journal of Mass Emergencies and Disasters* 2:89-113.
- XXIV. Mitchell, J.T. and G.S. Everly. 2000. "Critical Incident Stress Management and Critical Incident Stress Debriefings: Evolutions, Effects, and Outcomes." Pp. 71-

- 90 in *Psychological Debriefing: Theory, Practice, and Evidence*, edited by B. Raphael and J. Wilson. Cambridge, United Kingdom: Cambridge University Press (as cited in Peterson 2003, p. 26).
- XXV. Nader, K., R. Pynoos, L. Fairbanks, and C. Frederick. 1990. "Children's PTSD Reactions One Year After a Sniper Attack at Their School." *American Journal of Psychiatry* 147:1626-1530 (as cited in NIMH 2002, p. 106).
- XXVI. National Institute of Mental Health. 2002. *Mental Health and Mass Violence: Evidence-Based Early Psychological Intervention for Victims/Survivors of Mass Violence. A Workshop to Reach Consensus on Best Practices*. NIH Publication No. 02-5138. Washington, D.C.: U.S. Government Printing Office. (Accessed April, 2003 at: <http://www.nimh.nih.gov/research/massviolence.pdf>).
- XXVII. North, C., S. Nixon, S. Shariat, S. Mallonee, J. McMillen, E. Spitznagel, and E. Smith. 1999. "Psychiatric Disorders Among Survivors of the Oklahoma City Bombing." *Journal of the American Medical Association* 282:755-762 (as cited in North et al. 2002, p. 859).
- XXVIII. North, Carol S., Laura Tivis, J. Curtin McMillen, Betty Pfefferbaum, Edward L. Spitznagel, Jann Cox, Sara Nixon, Kenneth P. Bunch, and Elizabeth M. Smith. 2002. "Psychiatric Disorders in Rescue Workers After the Oklahoma City Bombing." *American Journal of Psychiatry* 159:857-859.
- XXIX. Pelcovitz, D., B.A. Van der Kolk, S.H. Roth, F.S. Mandel, S.J. Kaplan, and P.A. Resick. 1997. "Development of a Criteria Set and a Structured Interview for Disorders of Extreme Stress (SIDES)." *Journal of Traumatic Stress* 10:3-16 (as cited in NIMH 2002, p. 106).
- XXX. Peterson, Danny. 2003. "Mitigation of Social Stress from Critical Incidents." *Journal of Emergency Management* 1 (Spring):19-26.
- XXXI. Schuster, Mark A., Bradley D. Stein, Lisa H. Jaycox, Rebecca L. Collins, Grant N. Marshall, Marc N. Elliott, Annie J. Zhou, David E. Kanouse, Janina, L. Morrison, and Sandra H. Berry. 2001. "A National Survey of Stress Reactions After the September 11, 2001, Terrorist Attacks." *The New England Journal of Medicine* 345:1507-1512.
- XXXII. Siegel, Judith M., Linda B. Bourque, and Kimberly I. Shoaf. 1999. "Victimization After a Natural Disaster: Social Disorganization or Community Cohesion?" *International Journal of Mass Emergencies and Disasters* 17:265-194.
- XXXIII. Wagman, David. 2003. "Does Critical Incident Stress Debriefing Work?" *Homeland Protection Professional* 2 (April):42.

XXXIV. Willigen, Mariëka Van. 2001. "Do Disasters Affect Individual's Psychological Well-Being? An Over-Time Analysis of the Effect of Hurricane Floyd on Men and Women in Eastern North Carolina." *International Journal of Mass Emergencies and Disasters* 19:59-83.