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Natural Disasters

Shane R. Jimerson
Jacqueline A. Brown
Elina Saeki
University of California, Santa Barbara

Yayoi Watanabe
Hosei University (Japan)

Tomoko Kobayashi
Shizuoka University (Japan)

Chryse Hatzichristou
University of Athens, Greece

On March 11, 2011, the massive magnitude 9.0 Great East Japan Earthquake occurred near the northeast coast of Honshu, Japan, which triggered a devastating tsunami that swept some coastal villages out to sea and caused major damage along the coast. This earthquake was the fifth most powerful earthquake in the past century and the most powerful on record in Japan. The earthquake also damaged the Fukushima Daiichi nuclear power plant, and thousands of residents in the region were evacuated as authorities worked to prevent a nuclear meltdown at those facilities. Heavy casualties and extensive damage were caused by this series of disasters. Over half a million residents were left homeless, and millions were without electricity or water for weeks following the earthquake and tsunami. Hundreds of thousands of residents were displaced or relocated, and over 18,000 people died (with an additional 10,000 people unaccounted for). For weeks there were widespread concerns regarding water and food contamination and the potential spread of disease. Hundreds of aftershocks of up to magnitude 7.2 created further anxiety during the following weeks. Prime Minister Naoto Kan called this

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the worst crisis Japan has faced since the end of World War II. Children in the impact zones and communities throughout the country were in need of immediate and long-term support.

Each day, earthquakes, hurricanes, typhoons, wildfires, windstorms, droughts, tsunamis, tornadoes, floods, landslides, volcanic eruptions, and other natural disasters affect children, families, and communities around the world. Among the over 8,000 natural disasters between 1970 and 2005, flooding was the most frequent disaster in all parts of the world (31%) except Africa and Oceania (International Strategy for Disaster Reduction [ISDR], 2006), with windstorms, such as hurricanes, typhoons, and tornadoes, also being quite common (27%). Earthquakes, droughts, landslides, and wildfires were found to be less frequent (9%, 8%, 5%, and 3%, respectively). Studies reported that collectively, natural disasters affected approximately 3.5 billion people on all continents between 1991 and 2005. Windstorms, earthquakes, and tsunamis were the most deadly natural disasters, killing over 625,000 people around the world between 1991 and 2005 (ISDR, 2006). Thus, preparation for this type of crisis should be a part of comprehensive school crisis planning in countries around the world.

Response in the aftermath of natural disasters is particularly complicated. The extensive damage caused by natural disasters often destroys community infrastructures essential to the provision of basic safety and services, such as water, electricity, and food; frequently displaces many residents; and causes fatalities and casualties in the hundreds or even thousands. Schools in the impact zone and surrounding areas are important contexts to provide support for children and families affected by natural disasters. During the past two decades, much has been learned about how children respond to natural disasters and what mental health professionals can do to facilitate the rebuilding and healing process (e.g., Kar, 2009; Margolin, Ramos, & Guran, 2010). This chapter discusses the impact of natural disasters on children and some strategies to support children following such crises.

UNIQUE CRISIS ISSUES ASSOCIATED WITH SPECIFIC NATURAL DISASTERS

Natural disasters present a variety of unique conditions and coping challenges, among them the need to relocate when one's home or community has been destroyed and the roles of families, communities, and professionals in lessening the trauma and facilitating healthy coping. The following sections discuss specific types of natural disasters, including hurricanes and typhoons, earthquakes, tornadoes, floods and tsunamis, and wildfires, and the unique considerations associated with them.

Hurricanes and Typhoons

Tropical cyclones in the western Pacific are called typhoons, and those in the Atlantic and eastern Pacific Oceans are called hurricanes. These events are usually predicted days to weeks in advance, giving communities time to prepare. Although communities

can be made aware of potential danger, there is always uncertainty about the exact location of a storm's strike. These predictions give families time to gather supplies and prepare their homes and children, yet such activities in and of themselves may generate fear and anxiety (Zenere & Lazarus, 1999).

Following these natural disasters, hurricane survivors often experience emotional and physical reactions. For example, startle responses to sounds may be acute in the months following, and subsequent storms may trigger panic reactions to fears that another hurricane is coming. Following Hurricane Katrina in New Orleans, 44% of parents surveyed (106 out of 242) indicated that their children developed mental health symptoms, including depression, anxiety, and difficulty sleeping (Weisler, Barbee, & Townsend, 2006). Furthermore, survivors may experience survivor's guilt if they were unharmed while other family members were injured or killed. Honeycutt, Nasser, Banner, Mapp, and DuPont (2008) found that experiencing guilt following Hurricane Katrina, along with fear, anger, and sadness, were predictors of trauma anxiety. Similarly, a study following the 1982 flooding in Nagasaki, Japan, revealed that the prevalence of depression and anxiety increased 3 months after the flood; then 5 months after the flood, patients with depressive and posttraumatic stress symptoms began visiting hospitals (Araki, 2006). Moreover, 1 year following the flood, suicide rates rose.

Although the hurricane event may last only a short time, survivors can be involved with the disaster aftermath for months or even years. Property destruction can be overwhelming. For example, following Hurricane Katrina many neighborhoods were destroyed. People suffered from dehydration and food poisoning, and subsequent flooding resulted in rancid smells due to sewage, rotten food, debris, toxic chemicals, and gasoline. Because of the flooding and the lack of electricity, mildew was common in the walls of houses that were still standing. Following such a disaster, families are attempting to reconstruct their lives and are required to deal with many different people and multiple agencies (e.g., insurance adjustors and electricians). A study of children affected by Hurricane Andrew explored student adjustment 3, 7, and 10 months postdisaster and revealed that many of their experiences were associated with symptoms of posttraumatic stress disorder (PTSD): (a) their exposure to traumatic events during and after the disaster, (b) their preexisting demographic characteristics, (c) the occurrence of major life stressors, (d) the availability of social support, and (e) the types of coping strategies used to deal with disaster-related distress (La Greca, Silverman, Vernberg, & Prinstein, 1996). Although PTSD symptoms declined over time, a substantial level of symptomatology was observed up to 10 months after the disaster. Similarly, a study in Japan following the 23rd typhoon of the 2004 season revealed that even 1 year later, approximately 33% of 600 respondents reported that their lives were not back to normal and that 28% of respondents were at high risk for PTSD (Fujii, Goto, & Kato, 2006). The impact and the duration of the effects were often greatest for those who evacuated their homes or who no longer had a home when they returned.

Earthquakes

In terms of psychological distress, earthquakes are different from other natural disasters because the event does not have a clearly defined endpoint. For example, in Japan, many children and families experienced great anxiety as hundreds of aftershocks, some as severe as magnitude 7.2, occurred in the weeks immediately following the devastating 9.0 Great East Japan Earthquake. Because of the legitimate fear that homes could collapse if another earthquake occurred, some individuals were unable to fall asleep until after the time of night that the first major earthquake struck, which kept them up until the middle of the night.

Unlike other natural disasters, such as hurricanes or floods, earthquakes occur with virtually no warning. This fact limits the ability of disaster victims to make the psychological adjustments that can facilitate coping. Although one can climb to higher ground before and during a flood, or install storm shutters before a hurricane, citizens usually receive no advance warning and no chance of preparation for earthquakes.

In addition, survivors may have to cope with visions of destruction; sounds of explosions and the rumbling of aftershocks; smells of toxic fumes and smoke; and tastes of soot, rubber, and smoke. Given these observations, it is not surprising that increases in psychiatric morbidity may occur following an earthquake. For instance, after the Yunnan earthquake that struck Asia in November 1988, morbidity rates doubled. After the 1999 earthquake in Taiwan, up to 95% of the children in the high-exposure area experienced posttraumatic stress disorder (National Center for Post-Traumatic Stress Disorder, 2000). A survey 6 months after the September 1999 earthquake in Athens, Greece, revealed that 78% of the children who experienced the earthquake also manifested symptoms of severe to mild PTSD (Kolaitis et al., 2003). The need for targeted, specialized mental health services was indicated (Roussos et al., 2005). After the earthquake, a crisis intervention program was implemented in schools to help the students understand the natural disaster, exchange experiences, describe and express their emotions, and feel empowered (Hatzichristou, 2008). (The same program was also implemented following the 2007 wildfires in Peloponnese.) The psychoeducational interventions were designed to meet the needs of all students in the classroom and were implemented by school psychologists in collaboration with trained teachers (Brock, Sandoval, & Lewis, 2005; Hatzichristou, 2011). A study of elementary school children following the Niigata Chuetsu earthquake in Japan revealed that many of the children had received support from their family, community personnel, and friends (Kobayashi, 2008). Kobayashi emphasized the importance of returning to schools when possible, to provide additional support to children. In addition, following the 1999 earthquake in Turkey, a recovery program focusing on the psychoeducation of the teachers was implemented in the schools of the affected regions. Students that participated in the School Reactivation Program were characterized as higher functioning in their daily routine than the students in the control group (Wolmer, Laor, Dedeoglu, Siev, & Yazgan, 2005). The benefits of returning to school as soon as possible after a disaster include the restoration of structure and routine, the provision of peer support, access to

mental health professionals, and the function of school attendance as a distraction from disaster exposure.

Tornadoes

Like earthquakes, tornadoes can bring mass destruction in a matter of minutes, and individuals typically have little time to prepare. Confusion and frustration often follow. People experience sensations during tornadoes that may generate coping challenges later, such as difficulty tolerating the sounds of trains or jets. In addition, as with other natural disasters, people have a difficult time coping with the sights and odors of destruction. For example, the May 1999 tornado in Oklahoma destroyed thousands of homes, killed 45 people, and injured 597 others. Research showed that even 1 year after the tornado, children still experienced both internalizing and externalizing symptoms, such as anxiety, reexperiencing of the event, and a sense of a shortened future (Evans & Oehler-Stinnett, 2006). In addition, self-reports and parent reports of children's fear in response to tornadoes are associated with increased posttraumatic distress (Lack & Sullivan, 2008).

Floods and Tsunamis

Flooding is one of the most common natural disasters. Flash floods are the most dangerous in that they occur without warning; move at intense speeds; and tear out trees, destroy roads and bridges, and wreck buildings. In cases of dam failure, the water can be especially destructive. In the aftermath of the Buffalo Creek disaster in 1972, in which a dam in West Virginia collapsed, 224 children were evaluated using interviews, storytelling, and projective measures. It was reported that most of the children who survived the flood experienced psychological distress. The two most significant predictors of impairment were the degree of disaster exposure and perceptions of family reactions (Newman, 1976).

Floods such as those that occurred in the Midwest during 1993 give residents and governments more time to prepare, because they are aware of the rising river levels. Sensations that may generate coping challenges include seeing the desolation of the landscape, smelling sludge and sodden property, experiencing the cold and wet, and dealing with vast amounts of mud. Most floods do not recede overnight, and many residents have to wait days or weeks before they can begin the cleanup. As noted by Feinberg (1999), "Flood waters sometimes take quite a while to recede and the extended agony of waiting to see what is left after your home has been under water for a month aggravates an exceedingly stressful emotional situation" (p. 134).

Tsunamis also can severely affect thousands of people. For example, the 2004 Indian Ocean tsunami affected several countries, including Indonesia, Sri Lanka, India, and Thailand, resulting in over 250,000 deaths and destroying coastal communities. Because of the destructive power of tsunamis, many bodies were never recovered, thus

complicating the grieving process for survivors. A study following the psychological effects of this tsunami found that 1 year later, children displayed symptoms of anxiety, withdrawal, fearfulness, acting out, and trauma (Bhushan & Kumar, 2007).

Pointing to the need for crisis intervention following this type of natural disaster was the situation in Bergen, Norway, following a 1998 flood in which an adolescent was killed. The affected school did not implement a crisis intervention. Subsequently, the students reported that they thought they would have coped better if there had been a crisis intervention in their school (Dyregrov, Wikander, & Vigerust, 1999).

Wildfires

Each year, wildfires occur on every continent except Antarctica. The most common cause of the wildfires in each region varies around the world. For instance, in the United States, Canada, and northwest China, lightning is the major source of ignition. In Mexico, Central America, South America, Africa, Southeast Asia, Fiji, and New Zealand, wildfires can be attributed to human activities such as agriculture and land-conversion burning. Human carelessness is a major cause of wildfires in China and the Mediterranean basin. In Australia, the source of wildfires can be traced to both lightning strikes and human activities, such as machinery sparks (International Association of Wildland Fire, 2011).

There is often some warning of an advancing wildfire; however, depending on the wind and terrain, the direction and spread of a wildfire can change abruptly. The timing of the warning can vary from one neighborhood to the next. Although some people may have hours (or even days) to evacuate, others will have only a few minutes to gather their belongings and leave their homes. Even if evacuation is not ultimately necessary, preparing for the possibility can be frightening for children, particularly if they are seeing television images of homes burning nearby. For example, in the summer of 2007 and 2009, over 50,000 residents in suburbs of Athens, Greece, were evacuated as a result of rapidly spreading wildfires that destroyed over 1 million acres and over 1,000 homes and took weeks to fully contain. During the months of June through September 2007, over 3,000 wildfires were recorded throughout Greece (International Strategy for Disaster Reduction, 2007, 2009).

Reactions immediately following a wildfire may include emotional and physical exhaustion. According to related research reported in La Greca et al. (1996), several important considerations relate to the potential effects on children. In some instances, children may experience survivor guilt that their own home was left unharmed while others' homes were completely destroyed. In general, one might expect greater symptomatology in children to be associated with more frightening experiences during the wildfire, such as physical proximity or visual exposure to the fire, and with greater levels of damage to their communities and homes. The sights, sounds, and smells of a wildfire often generate fear and anxiety. Consequently, similar sensations, such as the smell of smoke, may generate distress among children in the months that follow. Given

the scale of most wildfires, individuals living outside the ravages of the fires may still feel exposed to the danger from drifting clouds of smoke, flames on the horizon, and television reports. Some children may also react to follow-up news coverage after the fire and even weather reports that talk about dry fire conditions. Even though a wildfire will last for only a specific period of time, survivors may be involved with the disaster's aftermath for months or even years (Bolton, O'Ryan, Udwin, Boyle, & Yule, 2000; La Greca, Vernberg, Silverman, Vogel, & Prinstein, 1994).

Landslides

Landslides are not always predictable. Sudden releases of earth, rock, and debris on slopes can result from natural causes such as excessive rain, erosion, groundwater, or earthquakes, or in some instances may be influenced by human activities such as grading or development. Landslides occur around the world, with increased risk in areas that receive large amounts of rain or have steep slopes. The knowledge that homes and people have been buried further complicates the immediate crisis response activities, in which machinery and workers are clearing the debris to uncover structures and people underneath. The initial 72 hours can be very stressful for children and families as rescue efforts work to locate survivors amid the debris.

During June 2007, heavy monsoon rainfall in Chittagong, Bangladesh (a city of 5 million residents), caused landslides that engulfed homes around the hilly areas of the city, leaving over one third of the city under mud or water. Despite previous warnings from experts regarding the increasing likelihood of landslides, illegal hill cutting persisted. More than 2 million people were affected, with over 125 fatalities, including over 50 children, and more than 200 casualties. During this same monsoon period, in the adjacent district of Cox's Bazar, 400,000 people were marooned in floods. Thus, the effects of landslides may also be exacerbated by coinciding flooding in affected regions (Sarwar, 2008).

Catapano et al.'s (2001) study of the psychological consequences of the May 1998 landslide in Sarno, Italy, found higher rates of PTSD among those in the community, relative to a control group from another nearby community. The study emphasized the importance of providing support and interventions to members of communities experiencing landslides and other natural disasters.

UNIQUE CRISIS ISSUES COMMONLY ASSOCIATED WITH ANY NATURAL DISASTER

Whereas the previous section discussed crisis issues associated with specific natural disasters, the following section discusses issues common to all types of natural disasters. These include relocation, parents' reactions and family support, emotional reactivity, and coping styles.

Relocation

The frequent need for disaster survivors to relocate also creates unique crisis-related problems. For example, specific obstacles may cause additional stress following initial disaster effects, including psychological and physical distress, disruption of healthcare services, as well as changes in individuals' social environment and living conditions (e.g., Few, 2007; Uscher-Pines, 2009). Research following two major disasters supports these observations. Following Hurricane Katrina, relocated families faced many obstacles, such as being anxious about their future, homes, and belongings, with both adults and children not having access to proper healthcare or psychiatric medication (Madrid, Grant, Reilly, & Redlener, 2006). These obstacles were compounded when families were forced to relocate multiple times to different shelters. To facilitate the relocation process following natural disasters, Madrid et al. recommend promoting empowerment and normalcy among survivors, encouraging proactive measures to assist in coping with losses and change, and promoting a sense of community among relocated survivors. For instance, following the earthquake and tsunami in Japan, educational psychologists helped provide information and support to children, families, and communities to facilitate healthy coping. Community leaders and families faced additional relocation considerations following the 2004 Indian Ocean tsunami, including potential long-term decisions that would affect the community, such as who owns land that is vacated, whether industry may return to affected regions, and how to manage culturally inappropriate housing (e.g., inability of large and extended families to live together) and conflicts among relocated occupants (Wachtendorf, Kendra, Rodriguez, & Trainor, 2006). To help parents with the relocation process, professionals recommended that they enroll their children in school as soon as possible and that they collect and reconstruct school and health information (see Canter, Klotz, & Feinberg, 2005).

Parents' Reactions and Family Support

Parental reactions and family support following a natural disaster are important considerations in helping children cope following natural disasters. Proctor et al. (2007) addressed the effect of an earthquake on 117 families with children 4–5 years of age. Results indicated that mothers' negative behavior significantly predicted persistent distress of girls, and that parental behavior prior to the earthquake moderated the relation between the psychological effects of the earthquake and children's distress. Another study evaluating children's distress following earthquakes also highlighted the importance of parental presence and support following natural disasters (Margolin et al., 2010). These researchers emphasized the pressure that is on parents to reassure their children, who may be exhibiting increased separation anxiety and concern about their parents' safety. Children also look to the significant adults in their lives for guidance on how to manage their reactions after the event. Consequently, it is vital that parents provide support to their children and model appropriate behavior following disasters, even if they may also be struggling with various challenges.

Emotional Reactivity

Preliminary findings suggest that children with high levels of predisaster trait anxiety or trait negative affectivity are those children most likely to develop posttraumatic stress symptoms following a natural disaster (Weems et al., 2007). Furthermore, predisaster trait anxiety also predicts postdisaster generalized anxiety disorder and depressive symptoms. In another study supporting similar conclusions, researchers examined risk and protective processes for posttraumatic stress reactions and negative sequelae following the Northridge earthquake that struck the Los Angeles area in January 1994. The findings suggested that children with a preexisting anxiety disorder prior to the earthquake were at greatest risk of developing PTSD symptoms (Asarnow et al., 1999).

Coping Styles

Children's coping responses influence how they adapt to traumatic events. Terranova, Boxer, and Morris (2009) demonstrated that children who exhibited a negative coping style (i.e., externalizing, internalizing, and avoidant coping strategies) displayed increased symptoms of PTSD 8 months after Hurricane Katrina. Another study that examined how children cope following an earthquake found similar results (Zhang et al., 2010). The findings by Zhang et al. indicate that children who were more directly exposed and affected by an earthquake (i.e., had significantly more deaths, injuries, and economic loss in their family) were more likely to have a negative coping style than those who were less affected by the earthquake. Furthermore, those children with negative coping styles were more likely to have severe mental problems following the earthquake. In contrast, Cryder, Kilmer, Tedeschi, and Calhoun (2006) found that children's competency beliefs were significantly related to indicators of positive change experienced by children after Hurricane Floyd in 1999. This finding points to the importance of children having positive beliefs about their competency and future, which may influence how they perceive the traumatic event and how much effort they exert in coping with the stress.

Baggerly and Exum (2008) emphasize the importance of parents and teachers providing children with emotional support and adaptive coping strategies following a natural disaster. They recommend various tools for adults to help children and adolescents develop these strategies, such as providing the children with ways to deal with disruptive thoughts and feelings (e.g., writing thoughts down and remembering happy feelings), and assisting teens in writing encouraging letters to survivors or in providing support to younger children. A study of students with disabilities following natural disasters in Japan revealed that students with physical or social impairments faced increased difficulties (Kobayashi & Mochiduki, 2009). Research following a magnitude 7.0 earthquake in Japan in 1995 illustrated the importance of teachers' involvement in disaster relief, both directly and indirectly; dedicated teachers were important sources of support for the students and families (Atrabori, 1997). Earlier research also showed how preexisting vulnerabilities, such as poverty or family dysfunction, can affect recovery (La Greca et al., 1996). Additional strategies for parents and teachers to help

children cope with disasters include discussing facts and allowing children to express their feelings and concerns, emphasizing individual resiliency, and engaging in positive family activities (see NASP, 2008).

DEVELOPMENTAL ISSUES

The developmental level of children has important implications for preparing for and responding to natural disasters. The following section discusses developmental considerations among children and youth from preschool to high school.

Preschool-Age Children

In a study examining the reactions of preschoolers (ages 3–6) who were separated from their parents following Hurricane Katrina, Scheeringa and Zeanah (2008) found that children developed PTSD and comorbid disorders (e.g., oppositional defiant disorder and separation anxiety disorder) regardless of whether they evacuated before the storm or stayed through it. Other research has shown that preschoolers often have nightmares and trouble sleeping following natural disasters (Proctor et al., 2007) and engage in regressive behaviors such as fear of the dark and thumb sucking (Baggerly & Exum, 2008). In some cases the lack of developmental maturation can be a protective factor; for instance, a study following the 1995 magnitude 7.0 earthquake in Japan revealed that children younger than 7 years of age reported less distress relative to older children (Nagayama, 2010).

Elementary-Age Children

It is common for children ages 6 to 11 to have nightmares, sleep problems, irrational fears, and irritability following a natural disaster (NIMH, 2006). Elementary-age children may exhibit extreme withdrawal, irritability, disruptive behavior, school avoidance, and difficulty paying attention. Having outbursts of anger and getting into fights with their peers are common. Young children may complain of stomachaches or headaches that have no medical basis. Moreover, depression, anxiety, and emotional numbing are often present (NIMH, 2006). Specific fears may also occur, including fear of the dark, of being left alone, that something bad will happen to their family members, that they will be left alone or separated from their family, and that they caused some part of the disaster (La Greca, 1994).

Middle and High School Youth

In a study of Nicaraguan adolescents' reactions after Hurricane Mitch, it was found that youth in heavily affected areas experienced chronic and severe levels of posttraumatic stress and depressive symptoms (Goenjian, Molina, Steinberg, & Fairbanks, 2001). These researchers reported accumulating evidence that these sequelae have adverse effects on adolescents' future development, economic productivity, health, academic

achievement, and the stability they bring to marriage and family life. Furthermore, research examining reactions of adolescents following Hurricane Katrina showed that self-reported symptoms of posttraumatic stress were associated with increased life disruptions and losses, less family cohesion, and more delinquency following the disaster (Rowe, La Greca, & Alexandersson, 2010). Adolescents may experience sleeping and eating disturbances, agitation, and poor concentration. Adolescents may also experience flashbacks related to the traumatic event, have suicidal thoughts, and engage in antisocial behavior (NIMH, 2006).

GENDER ISSUES

In studies using large samples, boys have typically been found to be less symptomatic than girls following natural disasters (e.g., Giannopoulou et al., 2006). More specifically, these researchers found that girls ages 9–17 years reported significantly more PTSD, anxiety, and depressive symptoms than boys, regardless of whether they were directly or indirectly exposed to an earthquake. However, findings by Shaw, Applegate, and Schorr (1996) 21 months after Hurricane Andrew showed increased incidence of psychopathology for both boys and girls, with boys tending to display externalizing symptoms and girls tending to display internalizing symptoms. Considering the paucity of research examining gender differences in children's responses following a natural disaster, conclusions remain tentative and further research is warranted.

CULTURAL ISSUES

Few studies have systematically examined cultural and ethnic differences in response to natural disasters. Those studies that have examined youth exposed to natural disasters have used different methodologies and reported contradictory results. For example, in one study no differences between ethnic groups occurred at 3 months (when controlling for hurricane exposure), but at 7 and 10 months posthurricane, Hispanic and African American children reported greater PTSD symptoms than did Caucasian children (La Greca, 1996). However, in another study of the same hurricane (Jones, Fray, Cunningham, & Kaiser, 2001), no ethnic group differences were found.

An emerging area of research investigates the degree of family support and parental conflict as a moderator of children's adjustment following a natural disaster (Wasserstein & La Greca, 1998). It has been documented that when problems occur in middle-class American Caucasian families, assistance and support from the school system is accepted or encouraged by family members. In contrast, Hispanic families often rely on intergenerational support, because many generations of family members participate in the upbringing of children. In fact, close family support was more predictive of overall well-being for Hispanic children than for African American children (Levitt, Guacci-Franco, & Levitt, 1993). Following the 1995 magnitude 7.0 earthquake in Japan, relatively few of the survivors sought out professional support in the community (Goto, Fujii, & Kato, 2007). Following Hurricane Andrew, Wasserstein

and La Greca (1998) reported that high parental conflict was related to more PTSD symptoms in children; however, this was qualified by ethnicity. For Hispanic children, significantly more PTSD symptoms were associated with more parental conflict than with less conflict. In addition, among children with high parental conflict, Hispanic children reported more PTSD than did Caucasian children.

Some important cultural considerations for the Japanese people were revealed following the 2011 Tohoku earthquake (Saeki & Jimerson, 2011). Because the Japanese can be more reserved, they may not appear to express emotion following a crisis, regardless of the severity of their loss. They may be more likely to express their grief with close families and friends but may perceive psychological support as being shameful or stigmatic. Furthermore, at first they may decline offers of support due to modesty and humility but may later accept such offers. It is therefore important that Western countries take these cultural differences into account when providing support to the Japanese people.

Crisis response ought to be guided by careful consideration of the cultural setting in which the disaster occurs, including existing community resources, local perceptions of needs and problems, perceived causes of the problems, and ways of coping (Weiss, Saraceno, Saxena, & van Ommeren, 2003). Heath, Nickerson, Annandale, Kemple, and Dean (2009) have emphasized the importance of increasing cultural sensitivity when responding to crises, and they provide some useful resources for professionals to consider when supporting children and families. They also discuss strategies to overcome cultural barriers, such as carefully addressing issues of distrust and resistance to services, language and communication barriers, and social support. A multilevel model for crisis preparedness and intervention is proposed in the Greek educational system and consists of several domains, including development of a synthetic conceptual framework, education and training, intervention, publications, and collaboration and partnerships. An important aspect of this framework is that it highlights several basic cross-cultural and cross-national considerations that need to be taken into account (Hatzichristou, Issari, Lampropoulou, Lykitsakou, & Dimitropoulou, 2011).

CRISIS INTERVENTION

State and federal education legislation delineate that all schools must have in place a crisis response plan and a crisis response team (see Chapter 12 and Brock et al., 2009). The plan must address how to respond to a natural disaster and clarify the roles and responsibilities of each staff member. Faculty and staff must be informed of the protocol to follow when a disaster occurs. A crisis response procedural checklist is highly recommended (such as the example of a crisis response procedural checklist found in Brock et al., pp. 95–96). The checklist can guide the crisis response team through all phases of the recovery. Use of a procedural checklist assumes that all members of the crisis team have been adequately trained and have engaged in crisis preparedness activities before a natural disaster occurs. Table 30.1 provides a list of important activities to engage in immediately following a natural disaster.

Table 30.1. Important Activities to Engage in Immediately Following a Natural Disaster

Activity	Description	Resources
Support teachers and school staff	Provide resources to teachers to help them identify stress reactions in children and handle class discussions and answer questions. Ensure that all school staff members also have time to care for themselves.	Lazarus, Jimerson, & Brock, 2003b
Identify students who are high risk	Maintain close contact with teachers and parents to determine students at greatest risk. Risk factors may include relocation, level of parental support, and level of physical destruction.	Canter, Klotz, & Feinberg, 2005
Establish intervention strategies to support students and staff	Engage in group crisis interventions, individual counseling, small-group counseling, or family therapy.	Lazarus, Jimerson, & Brock, 2003a
Engage in postdisaster activities that facilitate healing	Engage in activities related to (a) exposure to discussion of disaster-related events, (b) promotion of positive coping and problem-solving skills, and (c) strengthening of children's friendship and peer support.	La Greca et al., 1994
Emphasize child resiliency	Help children identify what they have done in the past that helped them cope when they were frightened or upset. Tell students about other communities that have experienced natural disasters and recovered.	Brock et al., 2009
Support all members of the crisis response team	Ensure that all crisis response team members have an opportunity to process the crisis response. Providing crisis intervention is emotionally draining.	Brock et al., 2009
Secure additional mental health support	Use school psychologists and other school mental health professionals to help provide and coordinate ongoing mental health services. Connecting with community resources in order to provide such long-term assistance is important; ideally, these relationships will have been established in advance.	Brock et al., 2009

Actions School Leaders Can Take Prior to Opening School

The following sections summarize important actions school system administrators should take before opening their schools following a natural disaster. Primary sources from this chapter are Brock et al. (2009) and La Greca et al. (1994).

Establish Alternative Means of Communication
When natural disasters occur, traditional communication services such as telephones, cellular phones, and e-mail may be interrupted or destroyed. Therefore, devising effective alternative means of communication is essential to communication immediately following a natural disaster. The principal and members of the school crisis team need to make sure that they can contact each other, all faculty members, and other staff personnel, for example, by agreeing on a given location where important messages will be posted or by distributing two-way radios with district crisis emergency kits in the event that traditional communication systems are unavailable.

Delineate a Process for Faculty to Contact the Crisis Response Team and Their Students
All school staff should contact a previously designated phone number or individual to report their condition. This step is needed because of the possibility that staff members may be displaced by the disaster, and if the crisis team attempts to contact them they may appear to be missing. Faculty members should have a list of students and a means to contact their students to determine if and how they were affected by the disaster.

Conduct a Quick Assessment of the Damage and Make Appropriate Accommodations
Administrators and faculty should inventory the damage caused to their school and classrooms. Structural damage will result in a shortage of instructional space, so other accommodations may be necessary. Arrangements with nearby schools may be established as part of the crisis response plan for natural disasters.

Determine the Level of Response Required
A tornado that partially destroys one school campus will require a different level of assistance than will an earthquake or hurricane that destroys a number of school facilities. School superintendents, in consultation with district-wide school crisis teams, should determine what type of physical and mental health assistance is necessary. It is better to arrange for such mutual aid assistance before school opens than to find out later that assistance was needed and was not requested.

Address the Emotional and Survival Needs of Faculty and Staff
Crisis intervention must be made available to all affected faculty and staff prior to the opening of school. Providing appropriate mental health support is one example of helping affected faculty and staff. Staff members may have lost their homes and will

have to seek new lodging and transportation for themselves and their children and therefore will be under enormous stress.

Designate a Liaison to Provide Feedback to the Media

This step will provide rumor control and consistency of shared information. The local media can enlighten the community about the impact and needs of the school following a natural disaster and help establish partnerships between citizens and schools. For example, schools should collaborate with the media to clearly indicate their needs; otherwise they may end up with supplies and clothes they do not need and cannot store, while their real needs may go unmet. By compiling and sharing relevant information, the school can serve as an up-to-date information center and provide accurate information on community resources and school operations.

Identify Staff Needs and Provide Assistance

Because natural disasters may generate problems associated with finding food, clothing, and shelter, the school should help identify these needs and provide assistance. For example, following Hurricane Katrina, Plaquemines Parrish School District conducted a formal needs assessment by distributing questionnaires to students, parents, and staff members. As another example, following Hurricane Andrew, the staff at one elementary school brought Federal Emergency Management Agency (FEMA) personnel into the school to help staff members most severely affected by the storm. A Teachers Helping Teachers bulletin board was also initiated that listed the needs of staff members, which ranged from babysitting or a place to do laundry, to transportation, to a place for storing household goods, food, and clothing. In addition, a list was posted with names of volunteer staff members willing to help in specific areas. A retired attorney based at the school provided free legal advice related to insurance and housing (Del Valle, Lazarus, & Madique, 1996).

Contact All Families Needing Help

In addition to helping staff, schools should undertake outreach to students' families. For example, parent–teacher associations and student councils may provide gift certificates for either food or household items. This outreach will provide crisis interveners with an opportunity to connect with some of the most severely affected students and families. Efforts to identify and communicate with students and families from other countries living in the community will also be valuable, as these students and families may have special needs or lack knowledge regarding how to navigate local systems of support. Following Hurricane Andrew, having established contacts enabled school mental health staff to debrief parents and provide educational materials and suggestions for coping in the aftermath. A caring, stable parent is an important influence on a child's adjustment following a catastrophe (Margolin et al., 2010), and schools can provide essential support to those parents and families of students. In addition, the school's outreach permits the school mental health professional to evaluate the family stressors and determine the child's level of risk.

Actions to Take on the First Day of School and Beyond

School professionals must be prepared to take action when students return to school. The following sections discuss several actions that would be valuable when students return to school.

Greet Every Child in the Building

The principal should visit every classroom and express concern for all students and their families. A heartfelt letter written by the principal and distributed to students and their families may provide important information and facilitate healing.

Conduct Classroom Meetings

The purpose of this intervention is to enable all students to make some sense of the disaster. The process gives students an opportunity to have their feelings validated through sharing with others and can help them anticipate and prepare for the future. The classroom meetings encourage students to develop effective means of coping, normalize common reactions, and develop support networks.

Engage in Postdisaster Activities That Facilitate Healing

Researchers at the University of Miami and Florida International University developed a manual for professionals working with elementary school children following a natural disaster (La Greca et al., 1994). Activities in the manual emphasize three key components that are supported by the empirical literature: (a) provide a discussion of disaster-related events, (b) promote positive coping and problem-solving skills, and (c) strengthen children's friendship and peer support networks. For instance, school mental health professionals should be prepared to support children and families who express remorse that they were not harmed while many of their friends or neighbors were (i.e., survivors guilt).

Encourage Creative Instructional Methods Using Lessons Learned in the Aftermath of a Disaster

In dealing with lessons from disasters, teachers can use real-life examples to teach about math, weather, geography, geology, history, politics, social studies, psychology, and literature. A crisis can open individuals to new learning, and teachers may be presented with the ultimate teachable moment (Lee, 1999).

Identify Students Who Are High Risk and Plan Interventions

Students who have a higher risk of psychological disturbances include those who (a) had a high level of exposure, (b) thought they might die during the disaster, (c) were physically injured, (d) witnessed grotesque destruction, (e) suffered significant loss, (f) are grieving for victims, (g) had to relocate following the disaster, (h) had preexisting anxiety disorders or other mental health problems, (i) had inadequate parental support, or (j) used inadequate coping strategies. Interventions may include individual counseling, small-group counseling, or family therapy. By engaging in group crisis intervention and maintaining frequent communication with teachers and parents, the

school crisis response team can determine which students need counseling services. A mechanism also needs to be in place for self-referral of students. Specific treatments that have been recommended for children who are at increased risk for developing posttraumatic stress disorder following natural disasters include providing psychological first aid, as well as implementing community-based stress and coping and school-based psychosocial interventions (La Greca, 2008; Mohay & Forbes, 2009). Schools that are not located in the high-impact zone of the disaster also should have adequate staffing of mental health professionals. These neighboring schools and districts are often put in the position of absorbing students relocating in the aftermath of the disaster.

Secure Administrative Support

Following a disaster, extra administrators at school sites may be needed. For example, one school, following a series of tornadoes, arranged for a recently retired principal to be assigned to the school for temporary duty. This support helped the principal to rally the staff and students to meet postdisaster challenges and serve as the media spokesperson, while other administrators handled other routine administrative functions.

Secure Mental Health Support

Although more than enough caregivers are often willing to provide support during the immediate aftermath of a natural disaster, long-term services may be lacking. Thus, providing such long-term assistance will be an important provision in any crisis response plan.

Debrief All Members of the Crisis Response Team

Providing crisis intervention is emotionally draining. Therefore, all crisis response team members need an opportunity to process the crisis response. Response plans should prepare an infrastructure that provides care for the caregivers, to be certain that their needs are met in the aftermath of natural disasters (Brock et al., 2009).

CONCLUSION

This chapter provided a discussion of issues associated with specific natural disasters, such as hurricanes, earthquakes, tornadoes, and floods; developmental, gender, and cultural considerations related to natural disasters; and practical suggestions for crisis response following a natural disaster. In particular, this chapter emphasized the impact of natural disasters on children and what professionals have learned from previous experiences about important influences on children's coping following a natural disaster. For example, the extant literature emphasizes teaching effective coping strategies, fostering supportive relationships, and helping children process their emotions to facilitate healthy adjustment in the aftermath of a natural disaster. Collaboration between the school crisis response team and an assortment of community, state and provincial, and national organizations and agencies is necessary to respond to the many needs of children, families, and communities in the wake of natural disasters. In addition, previous incidents provide insights regarding response activities and necessary planning and preparation to enhance a school's immediate

response following a natural disaster. Healthy coping in the aftermath of a natural disaster takes considerable time; however, advanced preparation and planning will enhance the immediate response and facilitate subsequent coping and healing. An essential task of schools is to prepare for potential natural disasters.

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