



# **Disaster Preparedness & the Psychological Impact of Disasters on Children**

*A Bibliography*

---

**June 2024**

**Championing and Strengthening the  
Global Response to Child Abuse**

**[nationalcac.org](https://nationalcac.org) | 256-533-KIDS(5437) | 210 Pratt Avenue NE, Huntsville, AL 35801**

**©2024 National Children's Advocacy Center. All rights reserved.**

© 2006, 2016, 2021, 2024. National Children’s Advocacy Center. All rights reserved.

Preferred citation: National Children’s Advocacy Center. (2024). Disaster Preparedness & the Psychological Impact of Disasters on Children: A Bibliography. Huntsville, AL: Author.

This project was supported by a grant awarded by the Office of Juvenile Justice and Delinquency Prevention, Office of Justice Programs, U.S. Department of Justice. Points of view or opinions in this document are those of the author and do not necessarily represent the official position or policies of the U.S. Department of Justice.

## Scope

Disasters are nothing new, nor are the traumatic effects experienced by those affected. Tornadoes, earthquakes, floods, devastating storms, volcanic eruptions, tsunamis and hurricanes are a part of the world we inhabit. Children have always suffered physically and psychologically, not only as a direct consequence of the disaster itself, but also from grief and displacement. The scale of loss from earthquakes and wildfires in the western U.S., and the recurring hurricanes and tornadoes that blanket areas of the midwestern and southern U.S. each year are evidence of the susceptibility of any populace to the forces of nature. The common stress reactions can include anxiety, fear, anger, re-experiencing, and avoidance of reminders. Children may also experience a sense of loss and feelings of helplessness, displacement, grief or depression. Children may also become the victims of violence from adults who are having difficulty coping with their stress and posttraumatic anger. This bibliography addresses these topics.

## Organization

Publications include articles, book chapters, reports, and research briefs and are listed in date descending order. Links are provided to full text publications when possible. However, this collection may not be complete. More information can be obtained in the Child Abuse Library Online.

## Disclaimer

This bibliography was prepared by the Digital Information Librarians of the National Children's Advocacy Center (NCAC) for the purpose of research and education, and for the convenience of our readers. The NCAC is not responsible for the availability or content of cited resources. The NCAC does not endorse, warrant or guarantee the information, products, or services described or offered by the authors or organizations whose publications are cited in this bibliography. The NCAC does not warrant or assume any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed in documents cited here. Points of view presented in cited resources are those of the authors, and do not necessarily coincide with those of the NCAC.

# Disaster Preparedness & the Psychological Impact of Disasters on Children

## A Bibliography

Proulx, K., Daelmans, B., Baltag, V., & Banati, P. (2024). [Climate change impacts on child and adolescent health and well-being: A narrative review](#). *Journal of Global Health*, 14, 04061. DOI:10.7189/jogh.14.04061

Background: Worldwide, the climate is changing and affecting the health and well-being of children in many ways. In this review, we provided an overview of how climate change-related events may affect child and adolescent health and well-being, including children's mental and physical health, nutrition, safety and security, learning opportunities, and family caregiving and connectedness. Methods: In this narrative review, we highlighted and discussed peer-reviewed evidence from 2012–23, primarily from meta-analyses and systematic reviews. The search strategy used a large and varied number of search terms across three academic databases to identify relevant literature. Results: There was consistent evidence across systematic reviews of impact on four themes. Climate-related events are associated with a) increases in posttraumatic stress and other mental health disorders in children and adolescents, b) increases in asthma, respiratory illnesses, diarrheal diseases and vector-borne diseases, c) increases in malnutrition and reduced growth and d) disruptions to responsive caregiving and family functioning, which can be linked to poor caregiver mental health, stress and loss of resources. Evidence of violence against children in climate-related disaster contexts is inconclusive. There is a lack of systematic review evidence on the associations between climate change and children's learning outcomes. Conclusions: Systematic review evidence consistently points to negative associations between climate change and children's physical and mental health, well-being, and family functioning. Yet, much remains unknown about the causal pathways linking climate-change-related events and mental and physical health, responsive relationships and connectedness, nutrition, and learning in children and adolescents. This evidence is urgently needed so that

adverse health and other impacts from climate change can be prevented or minimised through well-timed and appropriate action.

Raccanello, D., Rocca, E., Barnaba, V., Vicentini, G., Hall, R., & Brondino, M. (2023). [Coping strategies and psychological maladjustment/adjustment: A meta-analytic approach with children and adolescents exposed to natural disasters](#). *Child Youth Care Forum*, 52, 25–63. DOI:10.1007/s10566-022-09677-x

Background: Following disasters, children and adolescents can use coping strategies to feel better. A growing body of studies investigated the relation between them and maladjustment/adjustment, i.e., negative symptomatology/positive indicators of development. Yet, these constructs are studied separately. Objective: We conducted two meta-analyses to examine the mean correlation between disaster-related coping strategies and indicators of maladjustment/adjustment following natural disasters in children and adolescents, considering the role of some moderators. Methods: We used PsycINFO, PubMed, Eric, and Scopus databases to identify articles on natural disasters (filters: participants  $\leq$  18 years at the disaster, peer-review, English language). Inclusion required investigating the relation between at least one coping strategy and at least one indicator of maladjustment (e.g., post-traumatic stress disorder, depression) and/or adjustment (e.g., self-efficacy, emotion understanding), for a total of 26 studies ( $k = 64$ ,  $n = 9692$ , for maladjustment;  $k = 37$ ,  $n = 3504$ , for adjustment). Results: There were global positive significant correlations between coping strategies and negative symptomatology ( $r_{pooled} = .23$ ) for maladjustment, and positive indicators ( $r_{pooled} = .17$ ) for adjustment. Negative symptomatology positively correlated with escape ( $r = .19$ ), social isolation ( $r = .15$ ), submission ( $r = .64$ ), and opposition ( $r = .16$ ); positive indicators positively correlated with problem solving ( $r = .31$ ), social support ( $r = .22$ ), and submission ( $r = .30$ ). We found a moderating role of age, disaster type, and continent for maladjustment. Conclusions: The study presented an analysis of the coping

strategies that can be effective for children and adolescents dealing with natural disasters.

Rahmani, M., Muzwagi, A., & Pumariaga, A. J. (2022). [Cultural factors in disaster response among diverse children and youth around the world](#). *Current Psychiatry Reports*, 24, 481–491. DOI:10.1007/s11920-022-01356-x

Disasters and traumatic events are ever present globally but disproportionately impact culturally diverse low resource environments. Culture is an important context through which people experience disasters, develop adaptive strategies, and process external aid and support. This is even more critical for children and youth who are in the process of forming their cultural/ethnic identities. This review identifies literature on these important aspects of culture in disaster response. Recent Findings: The literature supports that culture influences the experience of disasters, the development of coping and adaptational approaches, and the acceptability of external aid and support, especially mental health services. Summary: Cultural humility, awareness, and sensitivity are crucial in addressing the traumatic impact of disasters in children and youth, especially in the areas of the world that are most at risk for them.

Gilmore, A. K., Price, M., Bountress, K. E., Zuromski, K. L., Ruggiero, K., & Resnick, H. (2021). [A longitudinal examination of interpersonal violence exposure, concern for loved ones during a disaster, and web-based intervention effects on posttraumatic stress disorder among adolescent victims of the spring 2011 tornadoes](#). *Journal of Interpersonal Violence*, 36(9–10), NP4611–NP4625. DOI:10.1177/0886260518791236

Natural disasters are common and devastating, and can affect the mental health of adolescents. It is also common for adolescents to have histories of interpersonal violence (IPV). The current study was a secondary data analysis of a larger randomized clinical trial and examined the moderating effect of IPV history and concern for loved ones during a disaster on treatment condition effects on posttraumatic stress disorder (PTSD)

symptoms over time among disaster-exposed adolescents. Participants (n = 979) were recruited postdisaster to participate in a randomized clinical trial examining the efficacy of a web-based intervention, Bounce Back Now (BBN), on mental health symptoms at 4 and 12 months postintervention. It was found that adolescents with an IPV history and who had caregivers that were concerned for loved ones during a disaster had more PTSD symptoms at baseline than those without such histories. Furthermore, caregiver concern for loved ones during a disaster moderated the effect of BBN on PTSD symptoms over time. Specifically, the BBN condition was most effective for adolescents who had caregivers who were concerned for loved ones during the disaster in reductions of PTSD symptoms over time. The current study provides further evidence for the use of technology-based interventions for individuals as a means to address mental health symptoms after a traumatic event, especially among those with more severe traumatic experiences.

Lafortune, S., Laplante, D. P., Elgbeili, G., Li, X., Lebel, S., Dagenais, C., & King, S. (2021). [Effect of natural disaster-related prenatal maternal stress on child development and health: A meta-analytic review](#). *International Journal of Environmental Research and Public Health*, 18(16), 8332. DOI:10.3390/ijerph18168332

The evidence supporting the idea that natural disaster-related prenatal maternal stress (PNMS) influences the child's development has been accumulating for several years. We conducted a meta-analytical review to quantify this effect on different spheres of child development: birth outcomes, cognitive, motor, physical, socio-emotional, and behavioral development. We systematically searched the literature for articles on this topic (2756 articles retrieved and 37 articles included in the systematic review), extracted the relevant data to calculate the effect sizes, and then performed a meta-analysis for each category of outcomes (30 articles included across the meta-analyses) and meta-regressions to determine the effect of some factors of interest on the association between PNMS and child development: type of PNMS (objective, psychological, cognitive, diet),



type of natural disaster (ice storm, flood/cyclone), type of report (maternal, third-party observer, medical), timing of exposure (preconception exposure included or not) and child age at assessment (under 10 or 10 years and older). We found that PNMS significantly influences all spheres of child development. Higher PNMS levels were associated with longer gestational age, larger newborns, and higher BMI and adiposity levels, as well as worse cognitive, motor, socio-emotional, and behavioral outcomes.

Li, X., & Zhou, S. (2021). Parental worry, family-based disaster education and children's internalizing and externalizing problems during the COVID-19 pandemic. *Psychological Trauma: Theory, Research, Practice, and Policy*, 13(4), 486–495. DOI:10.1037/tra0000932

Internalizing and externalizing problems are prevalent in disaster-exposed children but few studies have investigated these problems in relation to parental factors. This study examined how parental worry and family-based disaster education related to children's internalizing and externalizing problems during the outbreak of COVID-19 in China. Parents reported parental worry, family-based disaster education and their children's (5–8-year-old young elementary schoolchildren [n = 245] and 245 9–13-year-old early adolescents [n = 245]) internalizing and externalizing problems. Data analysis showed that (a) across ages, parental worry related to children's internalizing and externalizing problems significantly and positively; (b) the significant and negative relationships between family-based disaster education and internalizing and externalizing problems were only supported in young elementary schoolchildren; and (c) high level of parent worry attenuated the negative link between family-based disaster education and young elementary schoolchildren's internalizing problems. This study expands our knowledge about relationships between parental worry and children's disaster-related well-being, and highlights the importance of adapting family-based disaster education to different ages. Data suggest that parents of young elementary schoolchildren and early adolescents both should avoid showing excessive worry in front of their children during

the pandemic to help reduce their children's internalizing and externalizing problems. Effective family-based disaster education can mitigate young elementary schoolchildren's emotional distress and behavioral problems, the effect of which may be maximized if parents can avoid being overly worried. Parents of early adolescents should support their children in acquiring pandemic-related information independently and encourage them to seek support outside the family.

Widowati, E., Istiono, W., & Husodo, A. H. (2021). The development of Disaster Preparedness and Safety School model: A Confirmatory Factor Analysis. *International Journal of Disaster Risk Reduction*, 53, 102004. DOI:10.1016/j.ijdr.2020.102004

Educational institutions are obligated to protect children from multi-hazard disaster risks. The development of reliable and valid measuring instruments for school safety is an important component for reducing the impact of disasters on children's future at schools. This study aimed to examine the appropriateness of measuring instrument models, constructs and indicators of the Disaster Preparedness and Safety School (SSSB) program to be used in the assessment of the multi-hazard-based child safety education system in schools. This study used an explanatory research design with a cross-sectional approach. The sampling technique used was multistage cluster sampling with 539 elementary schools as samples. The data were analyzed by Confirmatory Factor Analysis (CFA) using Lisrel 8.80 software. The CFA results showed that the SSSB constructs are considered valid and reliable. The modified model fulfilled the Goodness of Fit criteria so that the model is considered fit and suitable to be applied at schools, with school commitment as the strongest forming factor ( $R^2$  of 82%) for creating a successful SSSB program.

Brown, K. L. (2020). Emergency preparedness during a global pandemic: Individual preparedness for COVID-19. *Journal of Emergency Management*, 18(7), 99–113. DOI:10.5055/jem.0533

Existing research on individual preparedness in the United States indicates that we are generally unprepared for disasters. While there is an abundance of research on emergency preparedness, there are gaps in our knowledge. For example, the results of extant research are unclear regarding what factors influence individual preparedness. The preparedness literature is also limited in the types of disasters examined and in understanding the timing of preparedness activities. The current COVID-19 global pandemic provides a tragic but albeit unique opportunity to address these limitations of previous research and examine emergency preparedness activities before and immediately following the onset of the COVID-19 outbreak in the United States. This research is further distinctive because it examines preparedness activities related to the global pandemic rather than other types of disasters. Policy and research implications of the findings are presented.

C. Fong, V., & Iarocci, G. (2020). [Child and family outcomes following pandemics: A systematic review and recommendations on COVID-19 policies](#). *Journal of Pediatric Psychology*, 45(10), 1124–1143. DOI:10.1093/jpepsy/jsaa092

A systematic review of mental health outcomes and needs of children and families during past pandemics was conducted based on the PRISMA protocol. The objectives were to evaluate the quality of existing studies on this topic, determine what is known about mental health outcomes and needs of children and families, and provide recommendations for how COVID-19 policies can best support children and families. Seventeen studies were identified through a search of PsycINFO, PubMed, Scopus, Web of Science, and Google Scholar. Studies examining child outcomes indicate that social isolation and quarantining practices exert a substantial negative impact on child anxiety, post-traumatic stress disorder, and fear symptoms. Potential risk factors such as living in

rural areas, being female, and increasing grade level may exacerbate negative mental health outcomes for children. Studies examining parental and family outcomes indicate that parents experience high stress, anxiety, and financial burden during pandemics. The age of the parent and family socioeconomic status (SES) appeared to mitigate negative outcomes, where older parents and higher SES families had lower rates of mental health problems. Parents' fear over the physical and mental health of their children, concerns over potential job loss and arranging childcare contributes to elevated stress and poorer well-being. Findings from this review suggest current gaps in COVID-19 policies and provide recommendations such implementing "family-friendly" policies that are inclusive and have flexible eligibility criteria. Examples include universal paid sick leave for parents and financial supports for parents who are also frontline workers and are at an elevated risk for contracting the disease.

Jonson-Reid, M., Drake, B., Cobetto, C., & Ocampo, M. G. (2020). [\*Child abuse prevention month in the context of COVID-19\*](#). Center for Innovation in Child Maltreatment Policy, Research and Training.

Jung, E., Kim, G. U., & Choi, E. K. (2020). Factors affecting home-based disaster preparedness among school-aged children's parents: A cross-sectional study. *Nursing & Health Sciences*, 22(2), 138–148. DOI:10.1111/nhs.12685

This study aimed to identify the factors affecting home-based disaster preparedness among Korean parents of school-aged children, based on an ecological model. A descriptive study was conducted involving 233 parents with school-aged children, using an online survey questionnaire. Parents' home-based disaster preparedness scores were classified into four groups: not prepared (36.5%), minimally prepared (38.2%), better prepared (17.6%), and most prepared (7.7%). Home-based disaster preparedness predictors corresponded to occupation and disaster-related knowledge in Model I, parents who had received disaster education in Model II, and age and participation in

disaster education for parents and children together in Model III. The findings indicate that home-based disaster preparedness in Korea is inadequate. Therefore, it is necessary to develop and provide disaster-related education programs that consider each population group's needs and disaster preparedness level. Additionally, it is important to form networks for sharing the latest disaster-related information both inside and outside the family to maintain and manage disaster preparedness at home.

Masten, A. S., & Motti-Stefanidi, F. (2020). Multisystem resilience for children and youth in disaster: Reflections in the context of COVID-19. *Adversity and Resilience Science*, 1(2), 95-106. DOI:10.1002/ijop.12737

Interest in resilience is surging in research, policy and practice as threats from disasters rise and humanity confronts a global pandemic. This commentary highlights the importance of defining resilience for portability across system levels and disciplines in order to integrate knowledge and prepare adequately for the challenges posed to children and youth by multisystem disasters. A scalable definition of resilience is recommended: The capacity of a dynamic system to adapt successfully to challenges that threaten the function, survival or development of the system. Major determinants of adaptation among young people in the context of disaster are highlighted, including variations in adversity exposure dose, developmental timing, individual differences and the socio-ecological systems of children's lives that can be mobilised in response. Adaptation of children in disasters depends on the resilience of interconnected systems, including families, schools, communities and policy sectors. Implications of a multisystem perspective for disaster risk reduction and preparedness are discussed with a focus on nurturing the resilience of children and their societies for challenges in the near term and long into the future.

Schwab-Reese, L. M., Drury, I., Allan, H., & Matz, K. (2020). ["Oh, this is actually okay": Understanding how one state child welfare training system adapted to the COVID 19 pandemic.](#) *Child Abuse & Neglect, 110* (Pt 2), 104697.  
DOI:10.1016/j.chiabu.2020.104697

Background: Training for new and existing child protection system (CPS) caseworkers is critical to developing and maintaining a competent workforce that effectively works towards safety, permanency, and wellbeing outcomes for children in the system. The COVID-19 pandemic required a shift to virtual training to continue training CPS professionals safely. Objective: The purpose of our project was to determine if there were differences in learning outcomes between learners who completed training in the usual delivery methods (Pre-COVID) and the fully virtual delivery methods (Post-COVID). We also sought to understand any factors that facilitated or impeded successful virtual training during the pandemic. Participants and setting: Caseworkers-in-training completed learning and satisfaction assessments through standard continuing quality improvement efforts. Training facilitators, course developers, and leadership completed qualitative interviews. Methods: We assessed quantitative differences in one US state in learner knowledge, satisfaction, and behaviors before and during the COVID-19 pandemic and conducted a qualitative thematic analysis of interviews with training system employees. Results: Overall, there were limited differences in learner outcomes before and after the transition to virtual training delivery. Across the employee interviews, three main themes emerged: organizational culture facilitated the transition, external constraints caused challenges during the transition, and there were opportunities to evolve training practices positively. Conclusions: The shift to a virtual learning environment had little impact on learner knowledge or satisfaction. Employee perspectives indicated that the pre-COVID investment in organizational culture has substantial dividends for performance during the crisis.

So, M., Franks, J. L., Cree, R. A., & Leeb, R. T. (2020). [An evaluation of the literacy demands of online natural disaster preparedness materials for families](#). *Disaster Medicine and Public Health Preparedness*, 14(4), 449–458. DOI:10.1017/dmp.2019.62

Natural disasters are becoming increasingly common, but it is unclear whether families can comprehend and use available resources to prepare for such emergencies. The objective of this study was to evaluate the literacy demands of risk communication materials on natural disasters for U.S. families with children. In January 2018, we assessed 386 online self-directed learning resources related to emergency preparedness for natural disasters using five literacy assessment tools. Assessment scores were compared by information source, audience type, and disaster type. One-in-three websites represented government institutions, and three-quarters were written for a general audience. Nearly one-in-five websites did not specify a disaster type. Assessment scores suggest a mismatch between the general population's literacy levels and literacy demands of materials in the areas of readability, complexity, suitability, web usability, and overall audience-appropriateness. Materials required more years of education beyond the grade level recommended by prominent health organizations. Resources for caregivers of children generally and children with special health care needs possessed lower literacy demands than materials overall, for most assessment tools. Risk communication and public health agencies could better align the literacy demands of emergency preparedness materials with the literacy capabilities of the general public.

Bronfman, N. C., Cisternas, P. C., Repetto, P. B., & Castañeda, J. V. (2019). [Natural disaster preparedness in a multi-hazard environment: Characterizing the sociodemographic profile of those better \(worse\) prepared](#). *PloS One*, 14(4), e0214249. DOI:10.1371/journal.pone.0214249

The growing multi-hazard environment to which millions of people in the world are exposed highlights the importance of making sure that populations are increasingly better prepared. The objective of this study was to report the levels of preparedness of a community exposed to two natural hazards and identify the primary sociodemographic

characteristics of groups with different preparedness levels. A survey was conducted on 476 participants from two localities of the Atacama Region in the north of Chile during the spring of 2015. Their level of preparedness at home and work was assessed to face two types of natural hazards: earthquakes and floods. The findings show that participants are significantly better prepared to face earthquakes than floods, which sends a serious warning to local authorities, given that floods have caused the greatest human and material losses in the region's recent history of natural disasters. Men claimed to be more prepared than women to face floods, something that the authors attribute to the particular characteristics of the main employment sectors for men and women in the region. The potential contribution of large companies on preparedness levels of communities in the areas in which they operate is discussed. The sociodemographic profile of individuals with the highest levels of preparedness in an environment with multiple natural hazards are people between 30 and 59 years of age, living with their partner and school-age children. The implications of the results pertaining to institutions responsible for developing disaster risk reduction plans, policies and programs in a multi-hazard environment are discussed.

Gilchrist, N., & Simpson, J. N. (2019). Pediatric disaster preparedness: Identifying challenges and opportunities for emergency department planning. *Current Opinion in Pediatrics*, 31(3), 306–311. DOI:10.1097/MOP.0000000000000750

Purpose of this review was to review the current literature on best practices for pediatric disaster preparedness in an emergency department (ED). Children have unique anatomical, physiologic, immunologic, and psychosocial needs that impact their vulnerability to and resilience in a disaster, yet they have been historically underrepresented in disaster planning at local and national levels. Lessons learned from recent disaster events, disaster research, and disaster experts provide guidance on pediatric disaster preparedness for ED. All EDs should include children in their disaster



plans and exercises. ED staff should be knowledgeable about their role in institutional disaster operations and familiar with standard disaster management principles.

Mar, P., Spears, R., Reeb, J., Thompson, S. B., Myers, P., & Burke, R. V. (2019). Creation of a collaborative disaster preparedness video for daycare providers: Use of the Delphi model for the creation of a comprehensive disaster preparedness video for daycare providers. *Disaster Medicine and Public Health Preparedness*, 13(2), 123–127. DOI:10.1017/dmp.2018.9

Eight million American children under the age of 5 attend daycare and more than another 50 million American children are in school or daycare settings. Emergency planning requirements for daycare licensing vary by state. Expert opinions were used to create a disaster preparedness video designed for daycare providers to cover a broad spectrum of scenarios. Various stakeholders (17) devised the outline for an educational pre-disaster video for child daycare providers using the Delphi technique. Fleiss  $\kappa$  values were obtained for consensus data. A 20-minute video was created, addressing the physical, psychological, and legal needs of children during and after a disaster. Viewers completed an anonymous survey to evaluate topic comprehension. A consensus was attempted on all topics, ranging from elements for inclusion to presentation format. The Fleiss  $\kappa$  value of 0.07 was obtained. Fifty-seven of the total 168 video viewers completed the 10-question survey, with comprehension scores ranging from 72% to 100%. Evaluation of caregivers that viewed our video supports understanding of video contents. Ultimately, the technique used to create and disseminate the resources may serve as a template for others providing pre-disaster planning education.

Blake, N., & Fry-Bowers, E. K. (2018). Disaster preparedness: Meeting the needs of children. *Journal of Pediatric Health Care*, 32(2), 207–210. DOI:10.1016/j.pedhc.2017.12.003

Children in communities throughout the United States have been increasingly affected by natural disasters and disasters of human origin. During a 3-month period in 2017, the

pediatric population was affected by Hurricane Harvey in Texas and Louisiana; Hurricane Irma in Florida, Georgia, and South Carolina; and the devastation of Hurricane Maria in Puerto Rico. Uncontrolled wildfires in both Northern and Southern California devastated families and communities. Mass casualty shootings at a concert in Las Vegas, Nevada, and a church in Sutherland Springs, Texas, coincided with or quickly followed these disasters. With each event, hospitals and emergency services were significantly affected while meeting the needs of the pediatric population.

Chang, M. T., Bradin, S., & Hashikawa, A. N. (2018). Disaster preparedness among Michigan's licensed child care programs. *Pediatric Emergency Care*, 34(5), 349-356. DOI:10.1097/PEC.0000000000000783

This study aimed to assess if Michigan child care directors have created disaster management plans, and if local resources were used to develop and implement plans. From December 2013 to March 2014, the Early Childhood Investment Corporation conducted a survey of licensed child care programs in Michigan. An online survey regarding disaster preparedness and training resources was distributed to the directors of a convenience sample of registered child care centers among the Early Childhood Investment Corporation's statewide network of 11 resource centers. A total of 210 child care programs responded. Most (91%) of respondents had a disaster plan, but 40% did not include accommodations for special needs children, 51% did not have a family/child identification or reunification plan, and 67% did not have car safety devices and a predetermined route for evacuation. Fewer than 9% made disaster plans available online. Few collaborated with local fire (22%), police (27%), or pediatric or emergency medicine organizations (11%). Online modules were the most desirable training format. In a state without mandated child care guidelines for disaster preparedness, a substantial proportion of child care programs were missing critical components of disaster planning. Future interventions must focus on increasing partnerships with local organizations and

developing guidelines and training to include plans for special needs children, family/child identification and reunification, and evacuation/relocation.

Midtbust, L. G. H., Dyregrov, A., & Djup, H. W. (2018). [Communicating with children and adolescents about the risk of natural disasters](#). *European Journal of Psychotraumatology*, 9(sup2), 1429771. DOI:10.1080/20008198.2018.1429771

A vast number of people annually are affected by natural disasters. Children are at risk of losing their lives and suffer mentally or physically after such events. The fostering of resilience and preparedness ahead of disasters can reduce untoward effects of disastrous events. Risk communication and disaster education are considered important aspects of disaster preparedness, but little is known about whether such strategies influence children's behaviour when natural disasters occur or how they cope in the aftermath. This paper presents and discusses various strategies that promote preparedness activities to save lives. To a minor extent, it also includes strategies that can promote coping in the aftermath. Strategies such as informational campaigns, educational activities, psychoeducation and parental guidance are addressed. The literature to date indicates that schools are a suitable arena for risk communication, and that adolescents themselves should be involved and engaged in the communication strategies. However, the relationship between knowledge of preparedness strategies and the resulting preparedness actions is largely unknown. It is unknown whether changes in awareness and attitudes have resulted in actual behaviour change. It is advocated that preparedness activities and parental involvement should supplement information-based strategies.

Wisner, B., Paton, D., Alisic, E., Eastwood, O., Shreve, C., & Fordham, M. (2018). Communication with children and families about disaster: Reviewing multi-disciplinary literature 2015–2017. *Current Psychiatry Reports*, 20, 73. DOI:10.1007/s11920-018-0942-7

The purpose of this review was to identify strategies for communicating with youth and children pre- and post-disaster in the context of a broader survey of child participation in disaster risk reduction as well as methods for communication with children. Youth and children are capable of peer and community education and activism concerning disaster issues and such participation benefits the young actors. Family and sibling support are important in easing the impact of trauma on children. Contemporary forms of psychological first aid appear to do no harm and in line with current evidence. Generally, more evidence from evaluations is necessary to guide the development of communication strategies. Children are growing up in increasingly urban environments with less contact with nature and greater reliance on techno-social systems. Thus, young people may misunderstand natural hazards. Schools and conscious parenting can play important roles in building understanding and psychological resilience.

Barfield, W. D., Krug, S. E., & COUNCIL, D. P. A. (2017). [Disaster preparedness in neonatal intensive care units](#). *Pediatrics*, 139(5), e20170507. DOI:10.1542/peds.2017-0507

Disasters disproportionately affect vulnerable, technology-dependent people, including preterm and critically ill newborn infants. It is important for health care providers to be aware of and prepared for the potential consequences of disasters for the NICU. Neonatal intensive care personnel can provide specialized expertise for their hospital, community, and regional emergency preparedness plans and can help develop institutional surge capacity for mass critical care, including equipment, medications, personnel, and facility resources.

Edmonds, C. O. (2017). [Designing emergency preparedness resources for children with autism](#). *International Journal of Disability, Development and Education*, 64(4), 404–419. DOI:10.1080/1034912X.2016.1264577

Emergency preparedness is a fast developing field of education driven by the numerous disasters worldwide with more recent notable examples including the terrorist attacks of 9/11 in the US in 2001, the 2004 Indian Ocean Tsunami, Hurricane Katrina in 2005, the London bombings in 2005, the earthquake in China in 2008, the Great East Japan Earthquake in 2011, Hurricane Sandy in 2012 and more recently the Paris terror attacks in 2015. Whilst there is a growing literature focusing on the psychological implications of such disasters on children, there remains a lack of focus on disability, particularly neurodevelopmental disabilities such as autism. Due to the nature of autism, it is likely that this group will have specific needs during disasters and emergency situations and may find such situations more stressful than their typically developing peers, as such they can be considered a more at risk group in such events. In this article, I consider the need for an intervention for a nearly wholly neglected group in the field of education for emergency preparedness, children with autism, and report on phase one of a project aimed at designing resources for this group.

McNeill, I. M., & Ronan, K. R. (2017). Children in disasters: The role of household preparedness. *Natural Hazards*, 89(3), 1239–1254. DOI:10.1007/s11069-017-3019-8

The purpose of this research was to increase children's resilience to disasters, it is important to expand our understanding of what increases their vulnerability. One household factor that has been tied to disaster resilience in general is the extent to which households have prepared themselves. In the context of wildfire preparedness, the current study examined whether households with very young, young, or teenage children differ in the extent to which they prepare their household compared to childless households. A two-wave survey study amongst Australian residents of wildfire-prone areas (N wave1 = 998, N wave2 = 514) found that households with young (under twelve

years old) and very young (under six years old) children had prepared their properties less for wildfires compared to childless households at the start of the wildfire season, but they had caught up in property preparedness by the end of it. However, households with younger children also performed fewer disaster-planning actions than childless households. This difference remained significant throughout the season. The former group also reported lower motivation to prepare, greater perceived difficulty in preparing, and greater lack of time to prepare than childless households. The majority of these findings were explained by the younger age of the adult parents rather than the presence of younger children per se. An exception was that those with young and very young children reported a greater lack of time to prepare than childless adults of a similar age. We discuss practice and public policy implications that follow from this research.

Olympia, R. P., Weber, C., Brady, J., & Ho, S. (2017). Emergency and disaster preparedness of school transportation staff and school buses in the United States: Compliance with recommendations for school transportation safety. *Pediatric Emergency Care*, 33(11), 718–723. DOI:10.1097/PEC.0000000000000704

The aim of the study was to determine the compliance of school transportation staff and school buses with recommendations for the safe transportation of children to and from school and school-related activities. An electronic questionnaire was distributed to school transportation staff represented by the International Brotherhood of Teamsters during the 2013–2014 academic year. Analysis was performed on 558 completed questionnaires (13% usable response rate). Responders had previous training in first aid (89%), basic life support (28%), and cardiopulmonary resuscitation (52%). Seventy-eight percent of school buses in our sample had restraint devices and 87% had seat belt cutters. Responders reported the immediate availability of the following on their bus: communication devices (81%), first aid kits (97%), fire extinguishers (89%), automated external defibrillators (1%), and epinephrine autoinjectors (2%). Thirty percent of responders have had no previous training in the management of emergencies such as

trouble breathing, severe allergic reaction, seizures, cardiac arrest or unresponsiveness, and head, neck, or extremity trauma. Thirteen percent of responders are unfamiliar with or have had no previous training on protocols regarding emergency shelters and community evacuation plans in the event of a disaster. Variability exists in the compliance of school transportation staff and school buses with recommendations for the safe transportation of children. Areas for improvement were identified, such as educating school transportation staff in the recognition and initial management of pediatric emergencies, ensuring the presence of restraint devices, increasing the immediate availability of certain emergency medications and equipment, and familiarizing school transportation staff with designated emergency shelters and community evacuation plans.

Bagwell, H. B., Liggin, R., Thompson, T., Lyle, K., Anthony, A., Baltz, M., Melguizo Castro, M., Nick, T., & Kuo, D. Z. (2016). Disaster preparedness in families with children with special health care needs. *Clinical Pediatrics*, 55(11), 1036-1043.  
DOI:10.1177/0009922816665087

Children with special health care needs (CSHCN) may present unique challenges for disaster preparedness. This study's objective was to determine the impact of a disaster supply starter kit intervention on preparedness for families of CSHCN. The study was a 1-group pre-post cohort design with consecutive enrollment at the Arkansas Children's Hospital Medical Home Clinic. Pre- and postintervention survey findings were compared using McNemar's test. Of the 249 enrolled, 223 completed the postsurvey. At presurvey, 43% had an Emergency Information Form, compared with 79% at postsurvey ( $P < .001$ ). At presurvey, 18% had a disaster kit, compared with 99.6% at postsurvey, and 44% added items. Of the 183 respondents who did not have a disaster kit at presurvey, 99% ( $n = 182$ ) had a disaster kit on postsurvey, and 38% ( $n = 70$ ) added items. An inexpensive educational disaster supply starter kit may increase preparedness. Further investigation on sustainability and dissemination to other populations is needed.

Hamann, C. J., Mello, E., Wu, H., Yang, J., Waldron, D., & Ramirez, M. (2016). Disaster preparedness in rural families of children with special health care needs. *Disaster Medicine and Public Health Preparedness*, 10(2), 225–232.  
DOI:10.1017/dmp.2015.159

The purpose of this study was to describe disaster preparedness strategies and behaviors among rural families who have children with special health care needs and to examine the effect of self-efficacy and response-efficacy on disaster preparedness. Data for this study were drawn from the baseline surveys of 287 rural families with children with special health care needs who were part of a randomized controlled trial examining the impact of an intervention on disaster preparedness. Distributions of child, parent, and family characteristics were examined by preparedness. Linear regression models were built to examine the impact of self-efficacy and response-efficacy on level of disaster preparedness. Disaster preparedness (overall, emergency plan, discussion/practice, and supplies) was low (40.9–69.7%) among study families. Disaster preparedness was found to increase with each unit increase in the level of self-efficacy and family resilience sources across all 4 categories of preparedness. Disaster preparedness among rural families with children with special health care needs is low, which is concerning because these children may have increased vulnerability to adverse outcomes compared to the general population. Results suggest that increasing the levels of self-efficacy and family resilience sources may increase disaster preparedness.

Houston, J. B., First, J., Spialek, M. L., Sorenson, M. E., & Koch, M. (2016). Public disaster communication and child and family disaster mental health: A review of theoretical frameworks and empirical evidence. *Current Psychiatry Reports*, 18(6), 54. DOI:10.1007/s11920-016-0690-5

Children have been identified as particularly vulnerable to psychological and behavioral difficulties following disaster. Public child and family disaster communication is one public health tool that can be utilized to promote coping/resilience and ameliorate maladaptive child reactions following an event. We conducted a review of the public



disaster communication literature and identified three main functions of child and family disaster communication: fostering preparedness, providing psychoeducation, and conducting outreach. Our review also indicates that schools are a promising system for child and family disaster communication. We complete our review with three conclusions. First, theoretically, there appears to be a great opportunity for public disaster communication focused on child disaster reactions. Second, empirical research assessing the effects of public child and family disaster communication is essentially nonexistent. Third, despite the lack of empirical evidence in this area, there is opportunity for public child and family disaster communication efforts that address new domains.

Scannell, L., Cox, R. S., Fletcher, S., & Heykoop, C. (2016). "That was the last time I saw my house": The importance of place attachment among children and youth in disaster contexts. *American Journal of Community Psychology*, 58(1-2), 158-173. DOI:10.1002/ajcp.12069

Place attachment is important for children and youth's disaster preparedness, experiences, recovery, and resilience, but most of the literature on place and disasters has focused on adults. Drawing on the community disaster risk reduction, recovery, and resilience literature as well as the literature on normative place attachment, children and youth's place-relevant disaster experiences are examined. Prior to a disaster, place attachments are postulated to enhance children and youth's disaster preparedness contributions and reinforce their pre-disaster resilience. During a disaster, damage of, and displacement from, places of importance can create significant emotional distress among children and youth. Following a disaster, pre-existing as well as new place ties can aid in their recovery and bolster their resilience moving forward. This framework enriches current theories of disaster recovery, resilience, and place attachment, and sets an agenda for future research.

Hinton, C. F., Griesse, S. E., Anderson, M. R., Chernak, E., Peacock, G., Thorpe, P. G., & Lurie, N. (2015). [CDC grand rounds: Addressing preparedness challenges for children in public health emergencies](#). *Morbidity and Mortality Weekly Report*, 64(35), 972–974.

Recent public health emergencies including Hurricane Katrina (2005), the influenza H1N1 pandemic (2009), and the Ebola virus disease outbreak in West Africa (2014–2015) have demonstrated the importance of multiple-level emergency planning and response. An effective response requires integrating coordinated contributions from community-based health care providers, regional health care coalitions, state and local health departments, and federal agency initiatives. This is especially important when planning for the needs of children, who make up 23% of the U.S. population (1) and have unique needs that require unique planning strategies.

Legerski, J., Greenhoot, A. F., Vernberg, E. M., M. La Greca, A., & Silverman, W. K. (2015). Longitudinal analysis of children's internal states language and posttraumatic stress symptoms following a natural disaster. *Applied Cognitive Psychology*, 29(1), 91–103. DOI:10.1002/acp.3081

Disclosure of internal states terms (e.g., emotions, cognitions, and perceptions) in traumatic event descriptions is thought to be associated with physical and mental health in adults, but studies with children have been mixed, and the interpretation of many findings is complicated by the lack of longitudinal data. Using data collected from 568 students (ages 7–12 years) attending schools in Miami-Dade County, Florida, this study examined the internal states language in participant's written descriptions of the 'worst things that happened during the hurricane' collected 3 and 7 months after Hurricane Andrew. Associations between these internal states and their posttraumatic stress symptoms (PTSS) 3, 7, and 10 months post-hurricane were evaluated using structural equation modeling. Patterns of association suggest that PTSS were not affected by internal states disclosure; rather, internal states language seemed to be a manifestation

of PTSS. Implications for risk assessment, theory building, and treatment of PTSS in children are discussed. Copyright © 2014 John Wiley & Sons, Ltd.

Lyle, K. C., Milton, J., Fagbuyi, D., LeFort, R., Sirbaugh, P., Gonzalez, J., Upperman, J. S., Carmack, C., & Anderson, M. (2015). Pediatric disaster preparedness and response and the nation's children's hospitals. *American Journal of Disaster Medicine, 10*(2), 83-91. DOI:10.5055/ajdm.2015.0193

Children account for 30 percent of the US population; as a result, many victims of disaster events are children. The most critically injured pediatric victims would be best cared for in a tertiary care pediatric hospital. The Children's Hospital Association (CHA) undertook a survey of its members to determine their level of readiness to respond to a mass casualty disaster. The Disaster Response Task Force constructed survey questions in October 2011. The survey was distributed via e-mail to the person listed as an "emergency manager/disaster contact" at each association member hospital and was designed to take less than 15 minutes to complete. The survey sought to determine how children's hospitals address disaster preparedness, how prepared they feel for disaster events, and how CHA could support their efforts in preparedness. One hundred seventy-nine surveys were distributed with a 36 percent return rate. Seventy percent of respondent hospitals have a structure in place to plan for disaster response. There was a stronger level of confidence for hospitals in responding to local casualty events than for those responding to large-scale regional, national, and international events. Few hospitals appear to interact with nonmedical facilities with a high concentration of children such as schools or daycares. Little commonality exists among children's hospitals in approaches to disaster preparedness and response. Universally, respondents can identify a disaster response plan and routinely participate in drills, but the scale and scope of these plans and drills vary substantially.

Ronan, K. R., Alisic, E., Towers, B., Johnson, V. A., & Johnston, D. M. (2015). [Disaster preparedness for children and families: A critical review](#). *Current Psychiatry Reports*, 17(7), 58. DOI:10.1007/s11920-015-0589-6

Preparedness for disasters is universally low; children and families are particularly vulnerable groups. Against this backdrop, research on disaster preparedness for children and families is reviewed, with a focus on disaster preparedness and prevention education programs. Following definitions and theory/rationale, research is critically analyzed. While findings indicate a large growth in research in the past 15 years and largely positive findings, significant challenges remain. These challenges include issues related to methodological rigor, long-term effectiveness, and implementation. Recent research reflecting these important challenges is reviewed. At the same time, other recent research documents real potential for these programs, including findings which suggest that increased attention to incorporating theory- and evidence-supported components can enhance outcomes. Thus, despite some important limitations and challenges, research done to date signals promise for these programs in reducing risk and increasing resilience to disasters for children, families, and the households and communities in which they live.

Ronoh, S., Gaillard, J. C., & Marlowe, J. (2015). [Children with disabilities and disaster risk reduction: A review](#). *International Journal of Disaster Risk Science*, 6(1), 38-48. DOI:10.1007/s13753-015-0042-9

Children with disabilities are often excluded from disaster risk reduction (DRR) initiatives and, as a result, can experience amplified physical, psychological, and educational vulnerabilities. Research on children with disabilities during disasters is lacking, and their potential value in helping shape inclusive policies in DRR planning has been largely overlooked by both researchers and policymakers. This article highlights the existing research and knowledge gap. The review includes literature from two areas of scholarship in relation to disasters—children, and people with disabilities—and provides a critique of

the prevailing medical, economic, and social discourses that conceptualize disability and associated implications for DRR. The article analyzes the different models in which disability has been conceptualized, and the role this has played in the inclusion or exclusion of children with disabilities in DRR activities and in determining access to necessary resources in the face of disaster. Finally, the study explores possible pathways to studying the contribution and involvement of children with disabilities in DRR.

Schonfeld, D. J., & Demaria, T. (2015). Providing psychosocial support to children and families in the aftermath of disasters and crises. *Pediatrics*, 136(4), e1120–e1130. DOI:10.1542/peds.2015-2861

Disasters have the potential to cause short- and long-term effects on the psychological functioning, emotional adjustment, health, and developmental trajectory of children. This clinical report provides practical suggestions on how to identify common adjustment difficulties in children in the aftermath of a disaster and to promote effective coping strategies to mitigate the impact of the disaster as well as any associated bereavement and secondary stressors. This information can serve as a guide to pediatricians as they offer anticipatory guidance to families or consultation to schools, child care centers, and other child congregate care sites. Knowledge of risk factors for adjustment difficulties can serve as the basis for mental health triage. The importance of basic supportive services, psychological first aid, and professional self-care are discussed. Stress is intrinsic to many major life events that children and families face, including the experience of significant illness and its treatment. The information provided in this clinical report may, therefore, be relevant for a broad range of patient encounters, even outside the context of a disaster. Most pediatricians enter the profession because of a heartfelt desire to help children and families most in need. If adequately prepared and supported, pediatricians who are able to draw on their skills to assist children, families, and communities to recover after a disaster will find the work to be particularly rewarding.

Wolf-Fordham, S., Curtin, C., Maslin, M., Bandini, L., & Hamad, C. D. (2015). [Emergency preparedness of families of children with developmental disabilities: what public health and safety emergency planners need to know](#). *Journal of Emergency Management*, 13(1), 7–18. DOI:10.5055/jem.2015.0213

The purpose of this research was to assess the emergency preparedness knowledge, behaviors, and training needs of families of children with developmental disabilities (DD). A sample of 314 self-selecting US parents/guardians of children with DD, aged birth–21 years. 1) Preparedness self-assessment; 2) self-report regarding the extent to which families followed 11 specific preparedness action steps derived from publicly available preparedness guides; and 3) parent training and support needs. Although most participants assessed themselves to be somewhat to moderately well prepared, even those who reported being “very well prepared” had taken fewer than half of 11 recommended action steps. Most participants expressed a need for preparedness support; virtually all the respondents felt that training was either important or very important. Children with disabilities are known to be particularly vulnerable to negative disaster impacts. Overall, parents in this study appeared under-prepared to meet family disaster needs, although they recognized its importance. The results suggest opportunities and methods for public health and safety planning, education and outreach to parents of children with DD who would benefit from targeted training such as information and skill building to develop effective family preparedness plans and connections to local emergency management and responders.

Institute of Medicine. (2014). [Preparedness, response, and recovery considerations for children and families: Workshop summary](#). The National Academies Press. DOI:10.17226/18550.

Preparedness, Response and Recovery Considerations for Children and Families is the summary of a workshop convened in June, 2013 by the Institute of Medicine Forum on Medical and Public Health Preparedness for Catastrophic Events to discuss disaster preparedness, response, and resilience relative to the needs of children and families,

including children with special health care needs. Traditional and non-traditional medical and public health stakeholders from across federal, state, and local government health care coalitions, community organizations, school districts, child care providers, hospitals, private health care providers, insurers, academia, and other partners in municipal planning met to review existing tools and frameworks that can be modified to include children's needs; identify child-serving partners and organizations that can be leveraged in planning to improve outcomes for children; highlight best practices in resilience and recovery strategies for children; and raise awareness of the need to integrate children's considerations throughout local and state emergency plans.

Scott, B. G., Lapré, G. E., Marsee, M. A., & Weems, C. F. (2014). Aggressive behavior and its associations with posttraumatic stress and academic achievement following a natural disaster. *Journal of Clinical Child & Adolescent Psychology*, 43(1), 43–50. DOI:10.1080/15374416.2013.807733

Despite an abundance of evidence linking maltreatment and violence-related trauma exposure to externalizing problems in youth, there is surprisingly little evidence to support a direct link between disaster exposure and youth aggressive behavior. This study tested the theory that there is primarily an indirect association between disaster exposure and aggression via posttraumatic stress disorder (PTSD) symptoms. The current study also examined the association between aggression and academic achievement. A sample of 191 4th- to 8th-grade minority youth who experienced Hurricane Katrina were assessed for aggressive behavior using the Peer Conflict Scale (PCS), disaster exposure, PTSD symptoms, and academic achievement. Structural equation modeling of the set of associations was consistent with the theory suggesting that there is an indirect link between disaster exposure and aggression through PTSD symptoms. Aggression was negatively associated with academic achievement, and modeling indicated that the set of associations was age and gender invariant. Findings advance the theoretical understanding of the linkage between aggression and disaster exposure. Findings also

support the utility of the PCS in disaster research and the link between PCS scores and academic achievement.

Jones, S. L., & Schmidt, C. K. (2013). Psychosocial effects of disaster in children and adolescents: significance and management. *Nursing Clinics of North America*, 48(2), 229–239. DOI:10.1016/j.cnur.2013.01.005

This article provides a synthesis of the literature addressing the psychological and social effects on children and adolescents after disasters, and the factors that contribute to protecting this population from experiencing related symptoms. Clinical implications are presented for health care providers to reduce the possibility of long-term psychopathologies based on the *National Commission on Children and Disasters 2010 Report*.

Pfefferbaum, B., & Shaw, J. A. (2013). [Practice parameter on disaster preparedness](#). *Journal of the American Academy of Child & Adolescent Psychiatry*, 52(11), 1224–1238. DOI:10.1016/j.jaac.2013.08.014

This Practice Parameter identifies best approaches to the assessment and management of children and adolescents across all phases of a disaster. Delivered within a disaster system of care, many interventions are appropriate for implementation in the weeks and months after a disaster. These include psychological first aid, family outreach, psychoeducation, social support, screening, and anxiety reduction techniques. The clinician should assess and monitor risk and protective factors across all phases of a disaster. Schools are a natural site for conducting assessments and delivering services to children. Multimodal approaches using social support, psychoeducation, and cognitive behavioral techniques have the strongest evidence base. Psychopharmacologic interventions are not generally used but may be necessary as an adjunct to other interventions for children with severe reactions or coexisting psychiatric conditions.



Powell, T., & Holleran Steiker, L. K. (2012). Working with children and families who have survived natural disasters: Exploring substance abuse and other risk factors. *Journal of Social Work Practice in The Addictions, 12*(2), 209–214.  
DOI:10.1080/1533256X.2012.672129

Ryan, E. L., Hocke, T. M., & Hilyard, K. M. (2012). Ready or not, here it comes: Disaster preparedness messages on children's websites in the US. *Journal of Children and Media, 6*(3), 300–316. DOI:10.1080/17482798.2011.630740

Given the unique vulnerabilities of children during disasters, and the low rates of disaster preparedness in the United States, this content analysis examines the nature of federal preparedness materials specifically crafted for children. Three websites were analyzed: Let's Get Ready, FEMA for Kids, and ReadyKids. Borrowing from risk and health communication literature examining effectiveness of fear appeals, and using the Extended Parallel Process Model as a framework, content was examined for perceived threat, perceived efficacy, and possible behavioral outcomes. Results indicated heavy use of fictional characters and activities, some persuasive messages to parents, and an overall lack of messages connoting urgency. Being “prepared” was explicitly defined, with each site mentioning specific supplies. Consequences were highlighted on the FEMA site only, using fear appeals to emphasize severity and susceptibility, which may unintentionally trigger fear control responses in children rather than preparedness behavior. Shortcomings of the websites and suggestions for improvements are also discussed.

Overstreet, S., Salloum, A., Burch, B., & West, J. (2011). [Challenges associated with childhood exposure to severe natural disasters: Research review and clinical implications](#). *Journal of Child & Adolescent Trauma, 4*(1), 52–68.  
DOI:10.1080/19361521.2011.545103

Natural disasters cause widespread destruction, economic loss, and death, leaving children to cope with the devastating aftermath. The research literature has

demonstrated that children are at risk postdisaster for negative mental health outcomes, such as posttraumatic stress disorder and depression. The purpose of this review is to highlight the challenges associated with childhood exposure to severe natural disasters and to summarize the current research on clinical interventions for children postdisaster. Specific challenges reviewed include disaster-related deaths, secondary stressors typical in postdisaster environments, disruption in social networks, and the threat of recurrent disasters. A public health framework for school-based mental health services is discussed and the need for research on effective intervention models for youth in postdisaster environments is highlighted.

Furr, J. M., Comer, J. S., Edmunds, J. M., & Kendall, P. C. (2010). [Disasters and youth: A meta-analytic examination of posttraumatic stress](#). *Journal of Consulting and Clinical Psychology*, 78(6), 765.

Meta-analyze the literature on posttraumatic stress (PTS) symptoms in youths post-disaster. Meta-analytic synthesis of the literature summarizing the magnitude of associations between disasters and youth PTS, and key factors associated with variations in the magnitude of these associations. We included peer-reviewed studies published prior to 1/1/2009 that quantitatively examined youth PTS (18 years at event) after a distinct and identifiable disaster. Studies conducted within 1 year post-disaster, studies that used established measures, and studies that relied on child-report data identified a significant effect. Conclusion: Youths are vulnerable to appreciable PTS after disaster, with preexisting child characteristics, aspects of the disaster experience, and study methodology each associated with variations in the effect magnitude. Findings underscore the importance of measurement considerations in post-disaster research. Areas in need of research include the long-term impact of disasters, disaster-related media exposure, prior trauma and psychopathology, social support, ethnicity/race, prejudice, parental psychopathology, and the effects of disasters in developing regions of the world. Policy and clinical implications are discussed.

Sprung, M., & Harris, P. L. (2010). Intrusive thoughts and young children's knowledge about thinking following a natural disaster. *Journal of Child Psychology & Psychiatry*, 51(10), 1115–1124. DOI:10.1111/j.1469-7610.2010.02273.x

Hurricane Katrina devastated the Mississippi Gulf Coast in August 2005. Intrusive re-experiencing is a common posttraumatic stress symptom. However, young children with limited introspection skills might have difficulties identifying their intrusive thoughts. Method: A sample of 165 5- to 9-year-old children were surveyed about their unwanted intrusive thoughts and their knowledge about thinking, 10 months following the hurricane. Results: Results replicate and extend the findings from a previous study (Sprung, 2008). Although there was no difference in the overall occurrence of intrusive thoughts, there was a striking difference between hurricane exposed and control children in their contents. Children's knowledge about thinking was linked to their ability to report on their negative intrusive thoughts, even taking language ability into account. Conclusion: There is a shift toward negative content following hurricane exposure compared with non-hurricane-exposed children and knowledge about thinking is linked to the reporting of such intrusive thoughts. Implications for current research on autobiographical memory and for interventions following potentially traumatic events are discussed.

Daughtery, L. G., & Blome, W. W. (2009). Planning to plan: A process to involve child welfare agencies in disaster preparedness planning. *Journal of Community Practice*, 17(4), 483–501. DOI:10.1080/10705420903300504

In the aftermath of Hurricane Katrina when child welfare officials in Louisiana reported they did not know the whereabouts of all their children in foster care, disaster planning in public child welfare became a new area of concern. This article reports on a process of engaging seven public child welfare agencies in planning for disasters that could affect child safety and service delivery. The Washington Metropolitan Area Disaster Planning Project used a strengths-based approach to help agencies responsible for protecting and serving children in foster care and families at risk of abuse and neglect develop plans

to augment and continue service delivery and responsiveness in the aftermath of a natural or man-made disaster. The processes of gathering information on disaster responsiveness, interviewing community and professional informants, developing a template to guide disaster planning within the agencies, and implementing a tabletop exercise are described. As a result of this consultation effort agencies became aware that disaster planning at the state and county levels had proceeded without child welfare at the table, that the increase in need for child welfare services during a disaster was not recognized by disaster professionals, and that practicing disaster responsiveness is necessary to assure readiness.

McFarlane, A. C., & Van Hooff, M. (2009). [Impact of childhood exposure to a natural disaster on adult mental health: 20-year longitudinal follow-up study](#). *The British Journal of Psychiatry*, 195(2), 142-148. DOI:10.1192/bjp.bp.108.054270

Studies examining the impact of childhood disaster exposure on the development of adult psychopathology report increased rates of post-traumatic stress disorder (PTSD) and other psychopathology. To examine the rates of PTSD and other lifetime DSM-IV disorders in adults exposed to an Australian bushfire disaster as children in 1983 using a matched control sample recruited at the time of the original study. A total of 1011 adults recruited from an original sample of 1531 were assessed 20 years following the fires using the Composite International Diagnostic Interview (CIDI-2.1). Results showed only a small direct impact of the fires on adult psychiatric morbidity. A higher proportion of bushfire survivors met criteria for 'any DSM-IV disorder' and 'any anxiety'. Findings suggest that the long-term impact of a prominent trauma in childhood should be assessed in the context of other lifetime trauma in order to provide a more accurate account of PTSD prevalence rates.

Terranova, A. M., Boxer, P., & Morris, A. S. (2009). Factors influencing the course of posttraumatic stress following a natural disaster: Children's reactions to Hurricane Katrina. *Journal of Applied Developmental Psychology, 30*, 344–355.  
DOI:10.1016/j.appdev.2008.12.017

This investigation examined psychosocial and behavioral factors involved in the course of post-traumatic stress disorder (PTSD) symptoms in youth affected by Hurricane Katrina. Participants ( $N = 152$ ; 54% female; 61% Caucasian; mean age = 11.5 years) self-reported on hurricane exposure, PTSD symptoms, fear reactivity, regulatory abilities, social experiences, and coping 1.5 months following the storm, and on their PTSD symptoms again 8 months following the storm. Fear reactivity predicted more severe initial PTSD symptoms. Peer victimization added to the prediction of subsequent PTSD symptoms. Whereas regulatory abilities protected against PTSD symptoms both initially and across time, a negative coping style enhanced vulnerability to PTSD symptoms. Thus, mental health service providers should work to minimize peer victimization experiences, improve regulatory abilities, and promote alternatives to negative coping in youth following disasters.

Baggerly, J., & Exum, H. A. (2008). Counseling children after natural disasters: Guidance for family therapists. *American Journal of Family Therapy, 36*(1), 79–93.  
DOI:10.1080/01926180601057598

After natural disasters, most children exhibit typical symptoms, which can be mitigated when parents and teachers provide emotional support and facilitate adaptive coping strategies. However, some children may experience clinical symptoms, which require professional counseling. This article guides family therapists in (a) identifying children's typical and clinical symptoms after a natural disaster, (b) training parents and teachers in basic interventions, and (c) implementing developmentally appropriate clinical interventions that integrate play. A multimodal, three-phase approach of Cognitive Behavior Therapy, Play Therapy, and Family Play Therapy is described.

Peek, L. (2008). Children and disasters: Understanding vulnerability, developing capacities, and promoting resilience—An introduction. *Children Youth and Environments, 18*(1), 1–29. DOI:10.1353/cye.2008.0052

This comprehensive overview of the literature on children and disasters argues that scholars and practitioners should more carefully consider the experiences of children themselves. As the frequency and intensity of disaster events increase around the globe, children are among those most at risk for the negative effects of disaster. Children are psychologically vulnerable and may develop post-traumatic stress disorder or related symptoms; are physically vulnerable to death, injury, illness, and abuse; and often experience disruptions or delays in their educational progress as a result of disasters. Children have special needs and may require different forms of physical, social, mental, and emotional support than adults. However, children also have the capacity to contribute to disaster preparedness, response, and recovery activities. In order to promote children's resilience to disasters, we must improve their access to resources, empower them by encouraging their participation, offer support, and ensure equitable treatment.

Salloum, A., & Overstreet, S. (2008). Evaluation of individual and group grief and trauma interventions for children post disaster. *Journal of Clinical Child & Adolescent Psychology, 37*(3), 495–507. DOI:10.1080/15374410802148194

This study evaluated a community-based grief and trauma intervention for children conducted post-disaster. Fifty-six children (7 to 12 years old) who reported moderate to severe levels of symptoms of posttraumatic stress were randomly assigned to group or individual treatment. Treatment consisted of a manualized 10-session grief- and trauma-focused intervention and a parent meeting. Measures of disaster-related exposure, posttraumatic stress symptoms, depression, traumatic grief, and distress were administered at preintervention, postintervention, and 3 weeks postintervention. There was a significant decrease in all outcome measures over time, and there were no

differences in outcomes between children who participated in group intervention and those who participated in individual intervention. Results suggest that this intervention using either treatment modality may be effective for addressing childhood grief and trauma post-disaster.

Cryder, C. H., Kilmer, R. P., Tedeschi, R. G., & Calhoun, L. G. (2006). [An exploratory study of posttraumatic growth in children following a natural disaster](#). *American Journal of Orthopsychiatry*, 76(1), 65–69. DOI:10.1037/0002-9432.76.1.65

This study extends L. G. Calhoun and R. G. Tedeschi's (1998) model of posttraumatic growth (PTG), positive change resulting from the struggle with trauma, to children by exploring the construct among youngsters who experienced Hurricane Floyd and the subsequent flooding. Despite burgeoning interest in PTG, few studies have examined the phenomenon among non-adults. This first systematic study of PTG in children explores hypothesized linkages among PTG and social support, competency beliefs, and ruminative thinking. Results suggest that competency beliefs relate to PTG and that a supportive social environment and ruminative thinking are associated with positive competency beliefs. Contrary to expectations, social support did not relate to rumination. Findings testify to the merit of studying the PTG process in children. Clinical implications and future directions are considered.

Evans, L., & Oehler-Stinnett, J. (2006). Children and natural disasters: A primer for school psychologists. *School Psychology International*, 27(1), 33–55.  
DOI:10.1177/0143034306062814

Worldwide children are impacted by natural disasters, including hurricanes, floods, tornadoes, earthquakes, wildfires, landslides and sandstorms, winter and severe storms, heat waves, volcanoes and tsunamis. School psychologists should understand natural disaster effects, such as economic loss, relocation and health concerns and mental

health issues. While most children are able to cope, a significant minority develops severe symptoms and Post Traumatic Stress Disorder (PTSD). School psychologists should gain trauma mental health training through the American Psychological Association, the National Association of School Psychologists, and the International School Psychology Association. They can also be involved in school and community prevention, mitigation and educational programming. This article presents an overview for school psychologists of the literature on children in natural disasters.

Evans, L. G., & Oehler-Stinnett, J. (2006). Structure and prevalence of PTSD symptomology in children who have experienced a severe tornado. *Psychology in the Schools*, 43(3), 283–295. DOI:10.1002/pits.20150

Children served by school psychologists are frequently impacted by natural disasters. In the United States, tornadoes are a particular threat but have been studied very little. The current investigation developed a scale for assessing posttraumatic stress disorder (PTSD) in children in Kindergarten to Grade 6 impacted by a severe tornado. Six factors were found: Avoidance, Re-experiencing, Interpersonal Alienation, Interference with Daily Functioning, Physical Symptoms/Anxiety, and Foreshortened Future. Prevalence rates for PTSD symptomology ranged from 34 to 44% for factor scores and 41% for meeting all three Diagnostic and Statistical Manual of Mental Disorder, fourth edition-text revision (DSM-IV-TR; American Psychiatric Association, 2000) criteria; 40% indicated no symptoms. Children's fear during the tornado and damage to their school were related to many factor scores.

National Child Traumatic Stress Network and National Center for PTSD. (2006). [Psychological first aid \(PFA\) field operations guide.](#)

Psychological First Aid (PFA) is an evidence-informed modular approach for assisting children, adolescents, adults, and families in the immediate aftermath of disaster and



terrorism. PFA is designed to reduce the initial distress caused by traumatic events, and to foster short- and longterm adaptive functioning. Principles and techniques of PFA meet four basic standards. They are: (1) consistent with research evidence on risk and resilience following trauma; (2) applicable and practical in field settings; (3) appropriate to developmental level across the lifespan; and (4) culturally informed and adaptable. PFA is designed for delivery by mental health specialists who provide acute assistance to affected children and families as part of an organized disaster response effort. These specialists may be imbedded in a variety of response units, including first responder teams, incident command systems, primary and emergency health care providers, school crisis response teams, faith-based organizations, Community Emergency Response Teams (CERT), Medical Reserve Corps, the Citizens Corps, and disaster relief organizations.

McDermott, B. M., Lee, E. M., Judd, M., & Gibbon, P. (2005). [Posttraumatic Stress Disorder and general psychopathology in children and adolescents following a wildfire disaster](#). *Canadian Journal of Psychiatry*, 50(3), 137–143.  
DOI:10.1177/070674370505000302

*Objective:* To report on the use of the Post Traumatic Stress Disorder Reaction Index (PTSD-RI) and the Strengths and Difficulties Questionnaire (SDQ) in identifying children and adolescents who may require psychological interventions following exposure to a wildfire disaster. *Method:* Six months after a wildfire disaster, we conducted a school-based program to screen for wildfire-related events, such as exposure to and perception of threat, posttraumatic stress disorder (PTSD), and general psychopathology. *Results:* The screening battery was completed by 222 children (mean age 12.5 years, SD 2.48; range 8 to 18 years). Severe or very severe PTSD was reported by 9.0% of students, while 22.6% scored in the abnormal range on the Emotional Symptoms sub-scale of the SDQ. Younger children and individuals with greater exposure to and perception of threat experienced higher levels of PTSD and general psychopathology. Female students

reported a greater perception of threat but did not report higher levels of PTSD or other symptoms. *Conclusions:* Screening was well received by students, parents, and staff and proved feasible in the post-disaster environment. The PTSD-RI and SDQ demonstrated different individual risk associations and functioned as complementary measures within the screening battery. The identification of children at greatest risk of mental health morbidity enabled service providers to selectively target limited mental health resources.

Gurwitch, R. H., Kees, M., Becker, S. M., Schreiber, M., Pfefferbaum, B., & Diamond, D. (2004). When disaster strikes: Responding to the needs of children. *Prehospital Disaster Medicine, 19*(1), 21–28. DOI:10.1017/S1049023X00001448

When a disaster strikes, parents are quick to seek out the medical advice and reassurance of their primary care physician, pediatrician, or in the case of an emergency, an emergency department physician. As physicians often are the first line of responders following a disaster, it is important that they have a thorough understanding of children's responses to trauma and disaster and of recommended practices for screening and intervention. In collaboration with mental health professionals, the needs of children and families can be addressed. Policy-makers and systems of care hold great responsibility for resource allocation, and also are well-placed to understand the impact of trauma and disaster on children and children's unique needs in such situations.

Keenan, H. T., Stephen, W. Marshall, S. W., Nocera, M. A., & Runyan, D. K. (2004). Increased incidence of inflicted traumatic brain injury in children after a natural disaster. *American Journal of Preventive Medicine, 26*(3), 189–193. DOI:10.1016/j.amepre.2003.10.023

*Background* The incidence of child abuse following natural disasters has not been studied thoroughly. However, parental stress and decreased social support have been linked to increased reports of child maltreatment. We hypothesized that a large-scale natural disaster (North Carolina's Hurricane Floyd) would increase the incidence of inflicted

traumatic brain injury (TBI) in young children. *Methods* An ecologic study design was used to compare regions affected to those regions unaffected by the disaster. Cases of inflicted TBI resulting in admission to an intensive care unit or death from September 1998 through December 2001 in North Carolina were ascertained. Poisson regression modeling was employed to calculate rate ratios of injury for each geographic area by time period. *Results* Inflicted TBI in the most affected counties increased in the 6 months post-disaster in comparison to the same region pre-disaster (rate ratio 5.1, 95% confidence interval [CI]=1.3–20.4), as did non-inflicted TBI (rate ratio 10.7, 95% CI=2.0–59.4). No corresponding increased incidence was observed in counties less affected or unaffected by the disaster. The rate of inflicted injuries returned to baseline in the severely affected counties 6 months post-hurricane; however, the rate of non-inflicted injuries appeared to remain elevated for the entire post-hurricane study period. *Conclusions* Families are vulnerable to an elevated risk of inflicted and non-inflicted child TBI following a disaster. This information may be useful in future disaster planning.

Lieberman, A. F., & van Horn, P. (2004). Assessment and treatment of young children exposed to traumatic events. In J. D. Osofsky (Ed.), *Young children and trauma: Intervention and treatment* (pp. 111–138). Guilford Press.

The impact of traumatic events on infants, toddlers, and preschoolers is only beginning to be systematically documented and understood. Children respond to trauma in ways that reflect the particular developmental tasks and challenges they are attempting to master. This chapter describes assessment strategies designed to identify traumatic responses in a developmental and contextual framework, and presents forms of intervention aimed at alleviating traumatic responses in the present and at preventing the consolidation of these responses into chronic patterns of emotional, social, and cognitive dysfunction.

Hamada, R. S., Kameoka, V., Yanagida, E., & Chemtob, C. M. (2003). Assessment of elementary school children for disaster-related posttraumatic stress disorder symptoms: The Kauai recovery index. *Journal of Nervous & Mental Disease, 191*(4), 268-272. DOI:10.1097/01.NMD.0000061147.39051.91

Reports the first and second stage results of a project to establish the psychometric properties of a PTSD symptom scale for children designed to be used communitywide after disasters. This analysis confirms the psychometric soundness of the Kauai Recovery Index (KRI). The KRI can be readily used as a brief instrument to screen disaster-exposed children in schools to identify those in need of psychological intervention and to plan and monitor effects of those interventions. It can also be used to monitor over time the psychological recovery of children after a disaster.

Kreuger, L., & Stretch, J. (2003). Identifying and helping long term child and adolescent disaster victims: Model and method. *Journal of Social Service Research, 30*(2), 93-108. DOI:10.1300/J079v30n02\_06

This paper reports on secondary analysis of data collected as part of an effort by social work providers and a major parochial school system to assess longer term impact and possible Post Traumatic Stress Disorder (PTSD) among children and adolescents in 17 schools heavily affected by flooding. The assessment protocol, implemented by classroom teachers, measured self-reported amount of damage from a major flood along with two standardized measures of PTSD. Discussed are findings regarding factors that predict PTSD including amount of harm and ability of family to recover, whether loss of residence was related to recovery and PTSD and other variables from this field screening of 3876 children and adolescents in the Midwest who lived in areas impacted by an extensive flooding.

Laor, N., Wolmer, L., Spirman S, & Wiener Z. (2003). Facing war, terrorism, and disaster: Toward a child-oriented comprehensive emergency care system. *Child & Adolescent Psychiatric Clinics of North America*, 12(2), 343–361.

The combination of the overwhelming nature of disasters and the massive losses they engender gives rise to a complex clinical and social picture with long-term physical, psychological, and social effects on children, families, and communities. The authors suggest that to assess the damage properly, implement interventions on a large scale, keep tabs on rising needs, and restore societal function, mental health professionals must adopt an ecologic systems approach. This approach entails working within and together with related institutions (education, health, local government) and assisting other committed professionals within these institutions to mediate care. This is of utmost importance in the area of children's care because of their particular vulnerability and their special importance for families and society. For this reason, the authors suggest that emergency mental health systems be better designed and implemented while keeping children at the center of their focus. An essential component of the ecologic systems approach is improved education for mental health professionals, providing them the appropriate tools to cope with widespread disaster and the expertise to apply these tools. This approach, however, is not enough. A good outcome cannot be achieved without preparedness on the part of the other relevant institutions and the community as a whole. Greater awareness is needed among local and national authorities of the importance of metaadaptive systems and of local, national, and international networking. In the current global village that is threatened by pervasive terrorism, no community must face it alone. The challenge of a disaster to one community is a challenge to all. By working together we can lessen the devastating impact of these events, save countless lives, prevent untold suffering, and maintain hope for a better world for children.

Reijneveld, S.A., Crone, M.R., Verhulst, F.C., & Verloove-Vanhorick, S.P. (2003). The effect of a severe disaster on the mental health of adolescents: A controlled study. *The Lancet*, 362(9385), 691-696. DOI:10.1016/S0140-6736(03)14231-6

*Background:* Disasters greatly affect the mental health of children and adolescents, but quantification of such effects is difficult. Using prospective predisaster and postdisaster data for affected and control populations, we aimed to assess the effects of a severe disaster on the mental health and substance use of adolescents. *Methods:* In January, 2001, a fire in a cafe in Volendam, Netherlands, wounded 250 adolescents and killed 14. In the 15 months before the disaster, all grade 2 students (aged 12-15 years) from a school in Volendam (of whom 31 were in the cafe during the fire), and from two other schools, had been selected as controls for a study. 124 Volendam students and 830 from the other two schools had provided data for substance use, and completed the youth self-report (YSR) questionnaire about behavioural and emotional problems. 5 months after the disaster, we obtained follow-up data from 91 (re-sponse rate 73.4%) Volendam adolescents and 643 (77.5%) controls from the other two schools. The primary outcome measures were changes in score in YSR categories of total problems, alcohol misuse, smoking, and substance use. We compared changes in scores between groups using logistic regression. *Findings:* Volendam adolescents had larger increases in clinical scores than controls for total problems (odds ratio 1.82, 95% CI 1.01-3.29,  $p=0.045$ ) and excessive use of alcohol (4.57, 2.73-7.64,  $p<0-0001$ ), but not for smoking or use of marijuana, MDMA (ecstasy), and sedatives. Increases in YSR scores were largest for being anxious or depressed (2.85, 1.23-6.61), incoherent thinking (2.16, 1.09-4.30), and aggressive behaviour (3.30, 1.30-8.36). Intention-to-treat analyses showed significantly larger for increases in rates of excessive drinking and YSR symptom subscales in Volendam adolescents than controls. Effects were mostly similar in victims and their classmates. *Interpretation:* Mental health interventions after disasters should address anxiety, depression, thought problems, aggression, and alcohol abuse of directly affected adolescents and their peer group.

Wolmer, L., Laor, N., & Yazgan, Y. (2003). School reactivation programs after disaster: Could teachers serve as clinical mediators? *Child & Adolescent Psychiatric Clinics of North America*, 12(2), 363-381. DOI:10.1016/S1056-4993(02)00104-9

Mental health interventions are known to prevent the progressive worsening of symptoms in young victims of disaster and, subsequently, to prevent a decline in their academic performance and self-esteem. The tremendous needs that emerge after a disaster and the reluctance shown by most victims to seek professional help require mental health leaders to adopt a proactive stance and implement relief programs in the child's most natural setting. The school as institution and the teachers as empowered mediators offer the appropriate conditions for implementing an effective large-scale intervention program. Well-intentioned child professionals who deal with school administrators and teachers must take into account that, as stated by Pfefferbaum et al, "avoidance is at the core of the posttraumatic response, and it sometimes involves avoidance of treatment." For child mental health professionals, routine collaboration across systemic boundaries may prove critical for the rapid mobilization of resources during mass traumatic emergencies. Further studies are needed to identify the protective and risk factors that predict resilience and pathology, respectively, and factors that facilitate or aggravate factors that predict improvement, resistance, and deterioration in response to treatment.

Chemtob, C. M., Nakashima, J., & Carlson, J. G. (2002). Brief treatment for elementary school children with disaster-related posttraumatic stress disorder: A field study. *Journal of Clinical Psychology*, 58(1), 99-112. DOI:10.1002/jclp.1131

Effective psychological intervention is needed to help children recover from disaster-related posttraumatic stress disorder (PTSD). This controlled study evaluated the effectiveness of a brief intervention for disaster-related PTSD. At one-year follow-up of a prior intervention for disaster-related symptoms, some previously treated children were still suffering significant trauma symptoms. Using a randomized lagged-groups design, we provided three sessions of Eye Movement Desensitization and Reprocessing (EMDR)

treatment to 32 of these children who met clinical criteria for PTSD. The Children's Reaction Inventory (CRI) was the primary measure of the treatment's effect on PTSD symptoms. Associated symptoms were measured using the Revised Children's Manifest Anxiety Scale (RCMAS) and the Children's Depression Inventory (CDI). Treatment resulted in substantial reductions in both groups' CRI scores and in significant, though more modest, reductions in RCMAS and CDI scores. Gains were maintained at six-month follow-up. Health visits to the school nurse were significantly reduced following treatment. Psychosocial intervention appears useful for children suffering disaster-related PTSD. Conducting controlled studies of children's treatment in the postdisaster environment appears feasible.

Gurwitch, R. H., Silovsky, J. F., Schultz, S., Kees, M., & Burlingame, S. (2002). Reactions and guidelines for children following trauma/disaster. *Communication Disorders Quarterly*, 23(2), 93-99. DOI:10.1177/152574010202300207

What to expect following trauma among elementary school students, middle school students, high school students, and teachers, and guidelines for response.

Johnson, K., Figley, C., & Shapiro, F. (2002). *Trauma in the lives of children: Crisis and stress management techniques for counselors, teachers, and other professionals* (2<sup>nd</sup> ed.). Hunter House.

This book discusses the impact of traumatic events upon children and strategies for addressing the problems they experience. Chapters include: what we know about crisis, children's reactions to trauma, what schools can do, and what therapists can do. It also addresses the impact of disaster mental health impact on workers and methods for managing professional stress.



Jones, R. T., Ribbe, D. P., Cunningham, P. B., Weddle, J. D., & Langley, A. K. (2002). Psychological impact of fire disaster on children and their parents. *Behavior Modification*, 26(2), 163-186. DOI:10.1177/0145445502026002003

Six weeks following a major wildfire, children's psychosocial functioning was examined. Employing a multi-method assessment approach, the short-term mental health consequences of the fire were evaluated. Individual adjustment was compared between families who reported high levels of loss as a result of the fire (high-loss group) and families who reported relatively low levels of loss resulting from the fire (low-loss group). Standardized assessment procedures were employed for children and adolescents as well as their parents. In general, high-loss participants reported slightly higher levels of post-traumatic stress disorder (PTSD) symptoms and significantly higher scores on the Impact of Events Scale. PTSD symptoms reported by parents were generally significantly correlated with (but not concordant with) PTSD symptoms reported by their children. The high-loss group scored significantly higher on the Resource Loss Index than did the low-loss group. Preexisting and comorbid disorders and previous stressors are described. A methodological framework for future studies in this area is discussed.

Shannon, M. P., Lonigan, C. J., Finch, A. K., & Taylor, C. M. (2002). Children exposed to disaster: I. Epidemiology of post-traumatic symptoms and symptom profiles. *Journal of the American Academy of Child & Adolescent Psychiatry*, 33(1), 80-93. DOI:10.1097/00004583-199401000-00012

5,687 school-aged children (aged 9-19 yrs) were surveyed about their experiences and reactions related to Hurricane Hugo. Significant variation in the prevalence of posttraumatic stress disorder (PTSD) symptoms was found across race, gender, and age groups. Self-reported symptoms were used to derive a post-traumatic stress syndrome classification according to Diagnostic and Statistical Manual of Mental Disorders-III-Revised (DSM-III-R) guidelines for the diagnosis of PTSD. More than 5% of the sample reported sufficient symptoms to be classified as exhibiting this post-traumatic stress syndrome. Females and younger children were more likely to receive this classification.

At the symptom level, females reported more symptoms associated with emotional processing and emotional reaction to the trauma. Males were more likely to report symptoms related to cognitive and behavioral factors. Younger children were more likely to report symptoms overall.

Lonigan, C. J., Shannon, M. P., Taylor, C. M., Finch, A. J., & Sallee, F. R. (2002). Children exposed to disaster: II. Risk factors for the development of post-traumatic symptomatology. *Journal of the American Academy of Child & Adolescent Psychiatry*, 33(1), 94-105. DOI:10.1097/00004583-199401000-00013

Three months after Hurricane Hugo, 5,687 school-aged children were surveyed about their experiences and reactions to the hurricane. The children were divided into 3 age groups: preadolescents (aged 9-12 yrs), early adolescents (aged 13-15 yrs), and late adolescents (aged 16+ yrs). Self-reports of posttraumatic stress disorder (PTSD) symptoms were obtained by use of a PTSD Reaction Index. The presence of PTSD symptoms was strongly related to children's reported severity of the hurricane, degree of home damage sustained, and continued displacement; however, children's level of trait anxiety and their reported emotional reactivity during the hurricane were more strongly related to the presence of PTSD symptoms than were the exposure factors. Different sets of risk factors appeared to differentially influence the development of the 3 Diagnostic and Statistical Manual of Mental Disorders-III-Revised (DSM-III-R) PTSD symptom clusters.

Shen, Y. J., & Sink, C.A. (2002). Helping elementary-age children cope with disasters. *Professional School Counseling*, 5(5), 322-330.

Focuses on the need for school counselors to incorporate disaster prevention and intervention in counseling elementary-age children. Effects of disasters on elementary-age children; Suggestions for possible school-based intervention; Use of child-centered play therapy in school setting.

Stubenbort, K., Donnelly, G. R., & Cohen, J. A. (2001). Cognitive-behavioral group therapy for bereaved adults and children following an air disaster. *Group Dynamics: Theory, Research and Practice*, 5(4), 261-276. DOI:10.1037/1089-2699.5.4.261

On September 8, 1994, USAir Flight 427 from Chicago crashed on its descent to the Pittsburgh International Airport. All 132 passengers and crew were killed. This crash was unique in that more than 80% of the victims were residents of the greater Pittsburgh area. In this regard, the need for professional intervention became vital. Group intervention allowed the professionals to promptly serve a large number of affected families. It was hypothesized that the group experience would lead to bonding and support that would persist beyond the time limits of the group. A group-based intervention program for adult and child survivors is described, including its administrative structure, therapeutic objectives and interventions, and group process. A direct outcome of this group was the establishment of The USAir Flight 427 Disaster Support League and, subsequently, the development of the National Air Disaster Alliance.

Bolton, D., O’Ryan, D., Udwin, O., Boyle, S., & Yule, W. (2000). The long-term psychological effects of a disaster experienced in adolescence: II: General psychopathology. *Journal of Child Psychology & Psychiatry*, 41(4), 513-523. DOI:10.1111/1469-7610.00636

Children and adolescents exposed to trauma can suffer major adverse psychological effects including not only post-traumatic stress but also other psychological disorders. This study investigates the long-term course of general psychopathology following trauma in adolescence using a standardized diagnostic interview and comparisons with a matched control group. Young people (N= 216) who as teenagers had survived a shipping disaster—the sinking of the “Jupiter” in Greek waters—between 5 and 8 years previously and 87 young people as matched controls were interviewed. The survivors showed raised rates of diagnosis in a range of anxiety and affective disorders during the follow-up period. The highest rates were among the survivors who had developed Post-Traumatic Stress Disorder (PTSD), and those survivors who had not were generally similar

to the controls. Onset of anxiety and affective disorders varied between being indefinitely close to the disaster to years later. Differences in rates of disorder between the survivor and control groups had lessened by the time of follow-up but were still apparent, due to continuing distress among the survivors still suffering from PTSD, and to a lesser extent among those who had recovered from PTSD. Generalisability of the findings are discussed.

Bulut, S., & Yule, W. (2000). The long-term psychological effects of a disaster experienced in adolescence: II: General psychopathology. *Journal of Psychology in the Orient*, 47(3), 158-168. DOI:10.1111/1469-7610.00636

Because Oklahoma has more tornadoes per square mile than any region in the world, children in Oklahoma and other disaster prone areas are at risk for developing posttraumatic stress disorder (PTSD) due to exposure to and threat of tornadoes. Given the gaps in the literature and the risk to children living in Oklahoma, the present study was undertaken to factor analyze items representing underlying dimensions of PTSD. This factor analysis of the responses of children who experienced a tornado indicates that it may be more useful to re-align the DSM-IV symptoms into five underlying dimensions. These dimensions appear to be: (1) blocking/vigilance, (2) affective/adjustment difficulties, (3) re-experiencing/ intrusion, (4) somatic/attachment and (5) sense of foreshortened future. Items of avoidance stimuli, loaded across factors, with avoiding places associated with vigilance, avoiding people associated with adjustment problems, and television stimuli associated with re-experiencing. Psychologists should consider these results when developing interventions.

Curtis, T., Miller, B., & Berry, E. (2000). Changes in reports and incidence of child abuse following natural disasters. *Child Abuse & Neglect*, 24, 1151–62.  
DOI:10.1016/S0145-2134(00)00176-9

*Objective* The aim of this research was to investigate if there is a higher incidence of child abuse following major natural disasters. *Methodology* Child abuse reports and substantiations were analyzed, by county, for 1 year before and after Hurricane Hugo, the Loma Prieta Earthquake, and Hurricane Andrew. Counties were included if damage was widespread, the county was part of a presidential disaster declaration, and if there was a stable data collection system in place. *Results* Based on analyses of numbers, rates, and proportions, child abuse reports were disproportionately higher in the quarter and half year following two of the three disaster events (Hurricane Hugo and Loma Prieta Earthquake). *Conclusions* Most, but not all, of the evidence presented indicates that child abuse escalates after major disasters. Conceptual and methodological issues need to be resolved to more conclusively answer the question about whether or not child abuse increases in the wake of natural disasters. Replications of this re-search are needed based on more recent disaster events.

Udwin, O., Boyle, S., Yule, W., Bolton, D., & O'Ryan, D. (2000). Risk factors for long term psychological effects of a disaster experienced in adolescence: Predictors of Post Traumatic Stress Disorder. *Journal of Child Psychology & Psychiatry*, 41(8), 969–979. DOI:10.1111/1469-7610.00685

This paper examines risk factors for the development of Post Traumatic Stress Disorder (PTSD), and its severity and chronicity, in a group of 217 young adults who survived a shipping disaster in adolescence. The survivors were followed up 5 to 8 years after the disaster. Risk factors examined fell into three main categories: pre-disaster child and family vulnerability factors, including childhood psychopathology; objective and subjective disaster-related experiences; and post-disaster factors, including results from screening questionnaires administered 5 months post-disaster, coping mechanisms adopted subsequently, life events, and availability of social supports. Developing PTSD

following the disaster was significantly associated with being female, with pre-disaster factors of learning and psychological difficulties in the child and violence in the home, with severity of exposure to the disaster, survivors' subjective appraisal of the experience, adjustment in the early post-disaster period, and life events and social supports subsequently. When all these factors were considered together, measures of the degree of exposure to the disaster and of subjective appraisal of life threat, and ratings of anxiety obtained 5 months post-disaster, best predicted whether survivors developed PTSD. For those survivors who developed PTSD, its duration and severity were best predicted not by objective and subjective disaster-related factors, but by pre-disaster vulnerability factors of social, physical, and psychological difficulties in childhood together with ratings of depression obtained 5 months post-disaster, and whether survivors received post-disaster support at school. The implications of these findings are considered for targeting assessment and intervention efforts at survivors most at risk of developing difficulties in adjustment following similar traumatic experiences.

Yule, W., Bolton, D., Udwin, O., Boyle, S., O'Ryan, D., & Nurrish, J. (2000). The long-term psychological effects of a disaster experienced in adolescence: I: The incidence and course of PTSD. *Journal of Child Psychology & Psychiatry*, 41(4), 503-511. DOI:10.1111/1469-7610.00635

Previous studies have shown that children and adolescents exposed to traumatic experience in a disaster can suffer from high levels of post-traumatic stress. The present paper is the first a series reporting on the long-term follow-up of a group of young adults who as teenagers had survived a shipping disaster-the sinking of the "Jupiter" in Greek waters-between 5 and 8 years previously. The general methodology of the follow-up study as a whole is described, and the incidence and long-term course of Post-Traumatic Stress Disorder (PTSD). It is the first study of its kind on a relatively large, representative sample of survivors, using a standardised diagnostic interview, and comparing survivors with a community control group. Survivors of the Jupiter disaster (N = 217), and 87 young

people as controls, were inter-viewed using the Clinician Administered PTSD Scale (CAPS). Of the 217 survivors, 111 (51.7%) had developed PTSD at some time during the follow-up period, compared with an incidence in the control group of 3.4 % (N = 87). In the large majority of cases of PTSD in the survivors for whom time of onset was recorded, 90 % (N = 110), onset was not delayed, being within 6 months of the disaster. About a third of those survivors who developed PTSD (30%, N = 111) recovered within a year of onset, through another third (34 %, N = 111) were still suffering from the disorder at the time of follow-up, between 5 and 8 years after the disaster. Issues relating to the generalisability of these findings are discussed.

Lee, O. (1999). [Science knowledge, world views, and information sources in social and cultural contexts: Making sense after a natural disaster](#). *American Educational Research Journal*, 36(2), 187–219. DOI:10.3102/00028312036002187

This study examined children's views of the world after they personally experienced a natural disaster--specifically, Hurricane Andrew in South Florida during the summer of 1992. The study addressed three issues: (a) children's knowledge of the hurricane; (b) children's views of the world, especially the causality of the hurricane; and (c) children's sources of information in social and cultural contexts. The study was conducted in the early spring of 1994. It involved 127 fourth and fifth grade students in two elementary schools located in areas that were particularly hard hit by the hurricane. The student sample was representative of various ethnic, socioeconomic, and gender backgrounds. Both quantitative and qualitative research methods were used for data collection and analysis. Results indicate significant differences as well as similarities in children's knowledge, world views, and information sources by ethnicity, socio-economic status, and gender. Implications for promoting scientific literacy for all students, including socially and culturally diverse students, are discussed.

McDermott, B. M. C., & Palmer, L. J. (1999). Post-disaster service provision following proactive identification of children with emotional distress and depression. *Australian & New Zealand Journal of Psychiatry*, 33(6), 855–863.  
DOI:10.1046/j.1440-1614.1999.00611.x

*Objective:* Proactive, school-based psychological testing for emotional distress and depression was employed 6 months after a bushfire disaster. The service provision aim was to provide children with the greatest emotional distress the relatively limited therapeutic resources available in the post-disaster environment. Specific hypotheses were tested: that the prevalence of emotional distress and depression would be elevated 6 months post disaster; that emotional distress would be correlated with traumatic events; and that depression would be related to experiences of loss. *Method:* Six months after a bushfire disaster grade 4, 5, and 6 students (n = 601) participated in screening using a test battery measuring emotional distress, depressive symptoms and trait anxiety. *Results:* Twelve percent (n = 72) of children experienced severe emotional distress 6 months after the bushfire. Rates of depression were similar to rates in non-traumatised child community samples. Multivariate analysis suggested that emotional distress was significantly associated with trait anxiety, evacuation experience, the perception that parents may have died during the bushfire, and depressive symptoms. Depressive symptoms were associated with total distress score, trait anxiety and perception of threat to the parents. *Conclusions:* Substantial mental health morbidity was identified 6 months after a bushfire disaster. The usefulness of post-disaster service provision influenced by proactive screening is discussed and reasons for further research highlighted.

Bahrnick, L. E., J. F. Parker, et al. (1998). [The effects of stress on young children's memory for a natural disaster](#). *Journal of Experimental Psychology: Applied*, 4(4), 308–331.  
DOI:10.1037/1076-898X.4.4.308

The effects of stress on children's long-term memory for a major hurricane were studied. Stress was objectively defined as low, moderate, or high according to the severity of damage to the child's home. One hundred 34 and 4-year-old children received a



structured interview 2-6 months following the hurricane. Older children recalled and elaborated more than younger children. Prompted recall was greater than spontaneous recall. There was a quadratic function, consistent with an inverted U-shaped curve, relating storm severity with overall as well as spontaneous recall. These findings can be applied to the effects of stress on the amount recalled by children giving retrospective accounts of temporally extended, naturalistic events.

Flynn, B. W., & Nelson, M. E. (1998). Understanding the needs of children following large scale disasters and the role of government. *Child & Adolescent Psychiatric Clinics of North America*, 7(1), 211-227. DOI:10.1016/S1056-4993(18)30269-4

No one who experiences a disaster is untouched by it. Children and their families are often among the most affected. This article explains how mental health and medical professionals can assist families and communities in dealing with common disaster-related stress reactions in children. An overview of disaster research and examples of special concerns about children are given. In addition, an overview of the role of local, state, and federal governments, as well as other organizations, is provided.

Gurwitch, R. H., Sullivan, M. A., & Long, P. J. (1998). The impact of trauma and disaster on young children. *Child & Adolescent Psychiatric Clinics of North America*, 7(1), 19-32. DOI:10.1016/S1056-4993(18)30257-8

In the past few decades, the study of the impact of trauma and disaster on children has grown; however, information about the effects on very young children is still scarce in the literature. In some regards, the characteristics of stress in young children are similar to those of older children and adults; in other ways, their reactions are unique. These characteristics, as well as mediating factors and interventions with young children, are discussed. Suggestions for future research are offered.

Lonigan, C. J., Anthony, J. L., & Shannon, M. P. (1998). Diagnostic efficacy of posttraumatic symptoms in children exposed to disaster. *Journal of Clinical Child Psychology*, 27(3), 255-267. DOI:10.1207/s15374424jccp2703\_3

Examined 5 conditional probability indices to determine the diagnostic efficacy of 48 symptoms associated with posttraumatic stress disorder (PTSD) in 5,687 children exposed to Hurricane Hugo, of whom 5.5% had a diagnosis of posttraumatic stress syndrome (PTSS). Moderate levels of sensitivity and high levels of specificity were obtained for most symptoms. Odds ratios more precisely demonstrated that some Diagnostic and Statistical Manual of Mental Disorders (DSM) symptoms of PTSD, especially when combined, were useful for identifying children with PTSS but that anxiety symptoms and some DSM symptoms of PTSD had poor diagnostic utility. Satisfying criteria for the DSM-III-R numbing/avoidance cluster and symptoms from the numbing/avoidance cluster had the highest diagnostic efficacy, suggesting that avoidance may be the hallmark of severe posttraumatic reactions. These results suggest which symptoms should be conceptualized as central versus peripheral to the disorder and which symptoms and symptom combinations clinicians should attend to most when diagnosing or screening PTSD in children.

Pfefferbaum, B. (1998). Caring for children affected by disaster. *Child & Adolescent Psychiatric Clinics of North America*, 7(3), 579-597. DOI:10.1016/S1056-4993(18)30230-X

The child and adolescent psychiatrist must play an essential role in the wake of disaster. The focus of the community and the world understandably turns to the physical devastation wrought, and emergency and medical efforts take center stage. Physical evidence of the past may be lost, but the child psychiatrist is able to maintain focus on what cannot be seen. He or she may be the only one to advocate the child's emotional needs. It may be too difficult for others who lack the specialized expertise of mental health training to attend to both the child's physical and emotional needs, and it may be

impossible for those without medical training to impress on medical personnel the importance of emotional issues. The child and adolescent psychiatrist, with his or her understanding of medical, mental health, and developmental concerns, is well positioned to support the child, the child's community, and the helpers whose own responses may complicate recovery.

Khoury, E. L., Warheit, G. J., Hargrove, M. C., Zimmerman, R. S., Vega, W. A., & Gil, A. G. (1997). The impact of hurricane Andrew on deviant behavior among a multiracial/ethnic sample of adolescents in Dade County, Florida: A longitudinal analysis. *Journal of Traumatic Stress, 10*(1), 71-91. DOI:10.1002/jts.2490100107

Findings from a longitudinal study are presented on the relationships between the problems and stresses resulting from Hurricane Andrew and post-hurricane minor deviant behavior. The sample (N = 4,978) included Hispanic, African-American, and White non-Hispanic middle school students enrolled in Dade County, Florida public schools. Two waves of data were collected prior to the hurricane; a third was obtained approximately 6 months following the storm. Results indicated that females were likely to report higher levels of hurricane-related stress symptoms than males. After controlling for prehurricane levels of minor deviance, family support, and race/ethnicity, hurricane stress symptom level remained a significant predictor of posthurricane minor deviant behavior. The findings lend support to stress theories of social deviance.

Prinstein, M. J., & La Greca, A. M. (1996). Children's coping styles and friends help children cope after a natural disaster. *Journal of Clinical Child Psychology, 25*(4), 463-475. DOI:10.1207/s15374424jccp2504\_11

Investigates types of coping assistance offered by parents, friends and teachers to children after a natural disaster. Assessment of post-traumatic stress disorder; Frequency of ten types of coping strategies; Children's perception of social support from significant others.

Swenson, C. C., Saylor, C. F., Powell, M. P., Stokes, S. J., Foster, K. Y., & Belter, R. W. (1996). Impact of a natural disaster on preschool children: Adjustment 14 months after a hurricane. *American Journal of Orthopsychiatry*, 66(1), 122-130. DOI:10.1037/h0080162

Fourteen months after a hurricane, young children who had experienced the storm showed significantly higher anxiety and withdrawal and more behavior problems than did children who had not. Behavioral problems decreased steadily over the six months following the storm. Mothers' distress in the hurricane's aftermath was associated with the longevity of their children's emotional and behavioral difficulties.

Warheit, G. J., Zimmerman, R. S., Khoury, E. L., Vega, W. A., & Gil, A. G. (1996). Disaster related stresses, depressive signs and symptoms, and suicidal ideation among a multi-racial/ethnic sample of adolescents: a longitudinal analysis. *Journal of Child Psychology & Psychiatry*, 37(4), 435-44. DOI: 10.1111/j.1469-7610.1996.tb01424.x

Longitudinal findings are presented on the relationships between disaster related stresses, depression scores, and suicidal ideation among a multi-racial/ethnic sample of adolescents (N = 4,978) all of whom have been exposed to Hurricane Andrew. Regression analysis showed that being female, hurricane generated stresses, low levels of family support, pre-hurricane suicidal ideation, and post-hurricane depression scores were significant predictors of post-hurricane suicidal ideation. Path analysis revealed that being female, low socioeconomic status, pre- and post-hurricane depression, high stress scores, low family support, and pre-hurricane suicidal ideation had significant direct/indirect effects on post-hurricane suicidal ideation.

Lonigan, C. J. D., Grace, M. P., Taylor, C. M., Finch, A. J., Jr., & Sallee, F. R. (1994). Children exposed to disaster: II. Risk factors for the development of post-traumatic symptomatology. *Journal of the American Academy of Child & Adolescent Psychiatry*, 33(1), 94-105. DOI:10.1097/00004583-199401000-00013

*Objective* To examine the influence of subject and exposure variables on the development of post-traumatic stress disorder (PTSD) symptoms and syndrome in children exposed to disaster. *Method* Three months after Hurricane Hugo, 5,687 school-aged children were surveyed about their experiences and reactions to the hurricane. Self-reports of PTSD symptoms were obtained by use of a PTSD Reaction Index. *Results* The presence of PTSD symptoms was strongly related to children's reported severity of the hurricane, degree of home damage sustained, and continued displacement; however, children's level of trait anxiety and their reported emotional reactivity during the hurricane were more strongly related to the presence of PTSD symptoms than were the exposure factors. Different sets of risk factors appeared to differentially influence the development of the three DSM-III-R PTSD symptom clusters. Little evidence for a differential effect of the risk factors between females and males and younger and older children was found. *Conclusions* Level of trait anxiety appears to be the single strongest risk for the development of severe post-traumatic reactions. The higher rate of post-traumatic symptoms in females and younger children in combination with the absence of differential reaction to the risk factors suggests that females and younger children are more likely to develop posttraumatic reactions following a disaster.

Durkin, M. S., Khan, N., Davidson, L. L., Zaman, S. S., & Stein, Z. A. (1993). [The effects of a natural disaster on child behavior: Evidence for posttraumatic stress](#). *American Journal of Public Health*, 83(11), 1549-1553. DOI:10.2105/AJPH.83.11.1549

*Objectives.* A prospective study of children examined both before and after a flood disaster in Bangladesh is used to test the hypothesis that stressful events play a causal role in the development of behavioral disorders in children. *Methods.* Six months before the disaster, structured measures of selected behavioral problems were made during an

epidemiological study of disability among 2- to 9-year-old children. Five months after the disaster, a representative sample of 162 surviving children was reevaluated. *Results.* Between the pre- and postflood assessments, the prevalence of aggressive behavior increased from zero to nearly 10%, and 45 of the 134 children who had bladder control before the flood (34%) developed enuresis. *Conclusions.* These results help define what may be considered symptoms of posttraumatic distress in childhood; they also contribute to mounting evidence of the need to develop and evaluate interventions aimed at ameliorating the behavioral and psychological consequences of children's exposure to extreme and traumatic situations.

Jeney-Gammon, P., Daugherty, T. K., Finch, A. J., Jr., Belter, R. W., & Foster, K. Y. (1993). Children's coping styles and report of depressive symptoms following a natural disaster. *Journal of Genetic Psychology, 154*(2), 259-267.  
DOI:10.1080/00221325.1993.9914739

The present study examined the relationship between children's coping styles (Spirito, Stark, & Williams, 1988) and self-reported levels of depressive symptoms (Kovacs, 1983) following a major stressor. 257 third- to fifth-grade children consented to participate in the study, 5 months following a hurricane. The number of coping strategies employed was positively related to depression scores, whereas coping efficacy was negatively related to depression scores. Social withdrawal, self-blaming, and emotional regulation were associated with more severe depressive symptoms. Lower levels of symptomatology were found among children who sought social support and engaged in cognitive restructuring. The overall symptom level in the sample did not exceed that of normative samples. Results are discussed in terms of competing theories of childhood depression.

Smith, E.M., & North, C.S. (1993). Posttraumatic stress disorder in natural disasters and technological accidents. In J. P. Wilson & B. Raphael (Eds.), *International handbook of traumatic stress syndromes*. (pp. 405–419). Springer.  
DOI:10.1007/978-1-4615-2820-3\_33

It is almost impossible to listen to a news broadcast or to pick up a newspaper without learning of yet another catastrophic event. As modern society becomes increasingly technologically based, it can be anticipated that the frequency of disasters will grow, and the types of disasters that occur will change. Disaster events of ages past were primarily natural occurrences, such as floods, volcanic eruptions, and tornadoes. Recent science has provided us with new potential disaster agents, such as nuclear power plants, jumbo jets, and toxic substances.

Vogel, J. M., & Vernberg, E. M. (1993). Part I: Children's psychological responses to disasters. *Journal of Clinical Child Psychology*, 22(4), 464–484.  
DOI:10.1207/s15374424jccp2204\_7

Provides a summary and evaluation of disaster-related psychological interventions with children and adolescents. Intervention models are grouped in temporal sequence in relation to the disaster event (predisaster phase, impact phase, short-term adaptation phase, and long-term adaptation phase). It is noted that most interventions are based on plausible conceptual assumptions, and convergence often can be seen in the content of interventions derived from diverse theoretical perspectives. Relatively little evaluation of disaster-related interventions with children has been published, and recommendations for research are presented.

Green, B. L., Lindy, J. D., Grace, M. C., Leonard, A. C. (1992). Chronic posttraumatic stress disorder and diagnostic comorbidity in a disaster sample. *Journal of Nervous and Mental Disorders*, 180(12), 760–766.

Research has indicated significant comorbid psychopathology with chronic posttraumatic stress disorder (PTSD) in samples of war veterans. The present paper examined the issue of comorbidity in a disaster sample to learn whether findings from veterans generalized to this event. 193 Ss exposed to the Buffalo Creek dam collapse of 1972 were examined 14 yrs later using diagnoses derived from the Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders–III (DSM–III). Past and present PTSD was found in a significant portion of the sample. Major depression was the next most common diagnosis and was highly related to PTSD. Anxiety disorders were also common. The overlap with other diagnoses was similar to that found in a sample of Vietnam veterans studied earlier, except that the disaster sample had fewer dysthymic disorders, substance abusers, and antisocial personality disorders.

Saylor, C.F., Swenson, C.C., & Powell, P. (1992). Hurricane Hugo blows down the broccoli: Preschoolers' post-disaster play and adjustment. *Child Psychiatry & Human Development*, 22(3), 139–149. DOI:10.1007/BF00705888

This article reports highlights from over 200 parents' observations of their preschoolers' play and verbalizations in the year following Hurricane Hugo. Commonly reported activities included reenactment and discussion of the event in multiple mediums, personification of "Hugo," and expression of fears related to storms. Precocious concern for others, insight, and vocabulary were also noted. In these intact, relatively high functioning families, parents seemed able to facilitate their youngsters' adjustment without outside intervention.



Bradburn, I. S. (1991). After the earth shook: Children's stress symptoms 6-8 months after a disaster. *Advances in Behaviour Research & Therapy*, 13(3), 173-179.  
DOI:10.1016/0146-6402(91)90005-U

Studied 22 children's (aged 10-12 yrs) response to an earthquake 6-8 mo after the event, particularly subjects' traumatic stress-related symptoms and factors mediating individual response. Principal variables examined were (1) experience of and proximity to loss of life and severe property damage, (2) family reactions, and (3) psychological vulnerability to having an adverse response, based on previous experience of psychological trauma. Measures administered during interview included a posttraumatic stress reaction index for children. Subjects reported experiencing traumatic stress-related symptoms that appeared associated with the seismic event. Subjects who lived closer to a heavily dam-aged area were more likely to experience a greater degree of stress than subjects who lived farther away.

Green, B. L., Korol, M., Grace, M. C., Vary, M. G., Leonard, A. C., Gleser, G. C., & Smitson-Cohen, S. (1991). Children and disaster: Age, gender, and parental effects on PTSD symptoms. *Journal of the American Academy of Child & Adolescent Psychiatry*, 30(6), 945-951. DOI:10.1097/00004583-199111000-00012

Psychiatric reports of 179 children aged 2 to 15 who were exposed to the Buffalo Creek dam collapse in 1972 were rated for post-traumatic stress disorder (PTSD) symptoms 2 years after the disaster. Age and gender effects and the impact of the level of exposure and parental functioning were examined according to a conceptual model addressing factors contributing to adaptation to a traumatic event. Results showed fewer PTSD symptoms in the youngest age group and higher symptom levels for girls than boys. Approximately 37% of the children were given a "probable" diagnosis of PTSD. Multiple regression analysis showed that life threat, gender, parental psychopathology, and an irritable and/or depressed family atmosphere all contributed to the prediction of PTSD symptomatology in the children.

Lonigan, C. J., Shannon, M. P., Finch, A. J., Daugherty, T. K., et al. (1991). Children's reactions to a natural disaster: Symptom severity and degree of exposure. *Advances in Behaviour Research & Therapy*, 13(3), 135-154. DOI:10.1016/0146-6402(91)90002-R

Self-report data for 5,687 children (aged 9-19 yrs) were collected approximately 3 months after a hurricane devastated the children's community. Information about the children's perceptions of hurricane severity, degree of home damage suffered as a result of the hurricane, and hurricane-related parental job loss was used to categorize children into 4 levels of hurricane exposure. Anxiety was measured via the Revised Children's Manifest Anxiety Scale, and reports of posttraumatic stress disorder (PTSD) symptoms were obtained via the Reaction Index. Significantly higher anxiety scores and significantly more PTSD symptomatology were found for children experiencing more or more severe exposure to the hurricane. Girls reported more anxiety and PTSD symptoms than boys, and Black children were more likely than White children to report PTSD symptomatology.

Aptekar, L., & Boore, J. A. (1990). The emotional effects of disaster on children: A review of the literature. *International Journal of Mental Health*, 19(2), 77-90.  
DOI:10.1080/00207411.1990.11449164

Examines the issues surrounding the mental health of children who are disaster victims. The review focuses on findings and problems associated with the nature and extent of the disaster trauma; influence of family and community; resilience or vulnerability of the child; and symptoms, their onset and duration. Predisaster level of functioning, cross-cultural differences, therapeutic approaches, and methodological considerations are discussed.

Ball, J., Woodbury, M. A., & Ribera, J. C. (1990). The psychological sequelae of disaster stress prospectively and retrospectively evaluated. *American Journal of Community Psychology*, 18(5), 661–80. DOI:10.1007/BF00931236

Aimed to document the psychological sequelae of a disaster in the adult (17–68 years) population of the Caribbean island of Puerto Rico, by surveying 912 persons (including 375 previously interviewed) with a Spanish version of the Diagnostic Interview Schedule. A rigorous methodology, which included both retrospective and prospective designs, was used, enabled by the occurrence of a catastrophic disaster only a year after a comprehensive survey was completed. Framed in a stress theoretical perspective, disaster effects for new depressive, somatic, and posttraumatic stress symptoms were identified, even after adjusting for demographic and methodologic factors. All the effects, however, were relatively small, suggesting that most disaster victims were rather resilient to the development of new psychological symptoms. Comparison of results with previous findings and its implications for both disaster and stress research are discussed, as well as the role of community psychologists in disaster action.

Bravo, M., J., Woodbury, M.A., & Ribera, J.C. (1990). The psychological sequelae of disaster stress prospectively and retrospectively evaluated. *American Journal of Clinical Psychology*, 58(1), 99–112. DOI:10.1007/BF00931236

Evaluated the effectiveness of a brief intervention for disaster-related posttraumatic stress disorder (PTSD). At 1-yr follow-up of a prior intervention for disaster-related symptoms, some previously treated children were still suffering significant trauma symptoms. Using a randomized lagged-groups design, 3 sessions of Eye Movement Desensitization and Reprocessing (EMDR) treatment were provided to 32 of these children (ages 6–12 yrs) who met clinical criteria for PTSD. The Children's Reaction Inventory (CRI) was the primary measure of the treatment's effect on PTSD symptoms. Associated symptoms were measured using the Revised Children's Manifest Anxiety Scale (RCMAS) and the Children's Depression Inventory (CDI). Treatment resulted in substantial

reductions in both groups' CRI scores and in significant reductions in RCMAS and CDI scores. Gains were maintained at 6-mo follow-up. Health visits to the school nurse were significantly reduced following treatment. Psychosocial intervention appears useful for children suffering disaster-related PTSD. Conducting controlled studies of children's treatment in the postdisaster environment appears feasible.

Briere, J., & Cramer, P. (1990). Children's defensive responses and emotional upset following a disaster: A projective assessment. *Journal of Personality Assessment*, 54(1-2), 116-127. DOI:10.1080/00223891.1990.9673979

Tested the validity of P. Cramer's Defense Mechanism Manual (1982, unpublished manuscript) by using it to evaluate children's reactions to a life-threatening traumatic event (lightning strike). The defense mechanisms of 27 boys (aged 10-13 yrs) who were victims of a lightning strike were assessed. subjects were interviewed 1-2 mo following the incident (in which one boy died), rated on degree of emotional upset based on behavior in the interview, and constructed projective stories from pictures of lightning bolts. Denial, projection, and identification, in combination, were inversely related to clinical upset, as was the age and sex-appropriate individual defense of projection. Results provide evidence for the validity of the Defense Mechanism Manual and support the hypothesis that defense mechanisms protect children from emotional upset.

Sugar, M. (1989). Children in a disaster: An overview. *Child Psychiatry & Human Development*, 19(3), 163-179. DOI:10.1007/BF00706040

Most children have psychopathological reactions to disasters, which are individually-based and vary according to age, developmental level, proximity to family members, specifics of their situation, losses during and after the disaster, and the responses of the family and community. Treatment should be individualized since children's improvement is not determined by parental response.

Sugar, M. (1988). A preschooler in a disaster. *American Journal of Psychotherapy*, 42(4), 619–629. DOI:10.1176/appi.psychotherapy.1988.42.4.619

A search of the literature of children in disasters showed no case of individual therapy with such a child. The absence may be related to a specific countertransference. In the case of the preschooler presented here, the child's particular situation and developmental stage were significant aspects of his reaction and therapy.

McFarlane, A. C. (1987). Family functioning and overprotection following a natural disaster: The longitudinal effects of post-traumatic morbidity. *Australian & New Zealand Journal of Psychiatry*, 21(2), 210–218. DOI:10.3109/00048678709160914

The longitudinal impact of a natural disaster on the patterns of interaction in families with latency-aged children is examined. An 11-item questionnaire was developed and two factors were isolated: irritable distress and involvement. A group of 183 disaster-affected families were contrasted with 497 families who had not been exposed to the disaster. Eight months after the disaster, the interaction in the disaster-affected families was characterised by increased levels of conflict, irritability and withdrawal. Maternal overprotection was also a common feature of the pattern of care in these families. Post-traumatic morbidity in parents was the major determinant of the observed changes in family functioning and the overprotection.

McFarlane, A.C. (1987). Posttraumatic phenomena in a longitudinal study of children following a natural disaster. *Journal of the American Academy of Child & Adolescent Psychiatry*, 26(5), 764–769. DOI:10.1097/00004583-198709000-00025

The prevalence of posttraumatic phenomena (PTP) and how they relate to symptomatic and behavioral disorders were examined in 808 school-children (mean age 8.2 yrs) at 2, 8, and 26 mo after being exposed to an Australian bushfire. The prevalence of PTP did not change over an 18-mo period, suggesting that they were markers of significant

developmental trauma. Mothers' responses to the disaster were better predictors of the presence of PTP than the subjects' direct exposure to the disaster. Both the experience of intrusive memories by the mothers and a changed pattern of parenting seemed to account for this relationship.

McFarlane, A. C., Policansky, S. K., & Irwin, C. (1987). A longitudinal study of the psychological morbidity in children due to a natural disaster. *Psychological Medicine*, 17(3), 727-738. DOI:10.1017/S0033291700025964

This longitudinal study examined the psychological impact of a bushfire disaster on a group of 808 children aged from 5 to 12. Contrary to prediction, the prevalence of behaviour and emotional problems 2 months after the fire was less than the prevalence in a carefully selected comparison group. Rather than decrease with time, the prevalence of psychological morbidity increased significantly, being as great 26 months after the disaster as at 8 months.

Burke, J. D., Jr., Moccia, P., Borus, J. F., & Burns, B. J. (1986). Emotional distress in fifth grade children after a natural disaster. *Journal of the American Academy of Child Psychiatry*, 25(4), 536-541. DOI:10.1016/S0002-7138(10)60014-3

Ten months after a blizzard and flood disaster struck their town, 19 5th-grade children in a church wrote stories about the coming winter. Stories were also written by 28 5th graders from a nearby but unflooded town. These were assessed blindly by 6 mental health clinicians for signs of distress, including fear, depression, and anxiety. Children from the flooded area demonstrated more distress than those from the nonflooded area. Only girls showed this effect; for boys, there was no difference between flooded and nonflooded groups. These results, which suggest that distress can persist as long as 10 months after a natural disaster, corroborate and extend the findings of an earlier study of younger children in this community conducted by J. D. Burke et al.

Burke, J. D., Jr., Borus, J. F., Burns, B. J., Millstein, K. H., & Beasley, M. C. (1982). Changes in children's behavior after a natural disaster. *American Journal of Psychiatry*, 139(8), 1010–1014. DOI:10.1176/ajp.139.8.1010

Five months after a severe winter storm, a survey of children whose behavior had been assessed by means of a parent rating scale during a Head Start program 6 months before the disaster showed that some problem-behavior scores had increased significantly. The subgroups of children at higher risk were boys, whose Anxiety scale scores increased, and children accepted for Head Start only because their parents said they had special needs, whose Aggressive Conduct scale scores increased. For the entire group of children, school behavior improved. The findings support previous impressions that parents deny their children's problems after a natural disaster.