THE AUSTRALIAN NATIONAL UNIVERSITY

WHAT WORKS FOR CHILDREN AND YOUNG PEOPLE AFTER DISASTERS? AN EVIDENCE REVIEW

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ACATLGN is a national collaboration to provide expertise, evidence-based resources and linkages to support children and their families through the trauma and grief associated with natural disasters and other adversities. It offers key resources to help school communities, families and others involved in the care of children and adolescents.

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Introduction

Exposure to disasters can be a major cause of trauma and emotional distress for children, adolescents and their families. Effective intervention has the potential, to not only alleviate distress and enhance coping following a disaster, but also prevent the onset or development of long-term mental health problems in young people.

The evidence review

This review of evidence provides a synthesis of research findings. It provides an up-to-date review of research evidence reported the peer-reviewed literature.

> "Evidence-informed practice is an approach to practice decisions that is intended to ensure that decision making is well informed by the best available research evidence. How this is done may vary, and will depend on the type of decisions being made and their context. Nonetheless, evidence-informed practice is characterised by the fact that its access and appraisal of evidence is an input into the practice decision making process is both systematic and transparent. This does not imply that the overall process of practice decisions will be systematic and transparent. However, within the overall process of practice decision making, systematic processes are used to ensure that relevant research is identified, appraised and used appropriately." Adapted from Oxman et al., 2009.

It is intended for use by those who work, or who are training to work, in areas related to the health and wellbeing of children and adolescents with an interest in the impact of psychological trauma, loss and grief.

The content of this evidence review is based on a systematic review; that is a comprehensive and exhaustive assessment of the literature pertaining to a focused clinical question. Systematic reviewers select and critically appraise studies relating to a particular field using a clear, strict and reproducible methodology designed to limit bias. Studies are included in the review if they meet strict criteria, and they are then evaluated according to specified research quality indicators.

Method

The review relates to:

- children and adolescents (aged 0-18) who have experienced disaster events
- any psychosocial intervention, such as a psychological or social treatment
- any outcomes measured quantitatively, such as symptom reduction, quality of life, or functioning.

Definition of a Disaster in the Evidence Review

The experience of a disaster (either natural or technological/man-made) is the primary focus of the paper. Our definition of "disaster" does not include war (escalating threat), community violence (chronic threat), homicide, interpersonal violence, injury-causing accidents, household fires, or life-threatening injury (unless it is a mass experienced event, not an individually experienced event).

For the purpose of this review a "disaster" is defined as a collectively experienced, time-limited event that involves an acute threat and the potential for mass collective stress (e.g. natural disasters, technological (human-made) accidents, episodes of mass violence).

Which studies were included?

This systematic review of the literature identifies treatment studies in which:

1. the intervention was related to the experience of a single-event disaster
2. the study sample was primarily composed of children and adolescents aged 0-18 years
3. the intervention was focused on a psychological/mental health, coping or general functioning outcome measure in specific relation to the effects of the disaster
4. quantitative pre and post intervention data were reported.

Which studies were excluded?

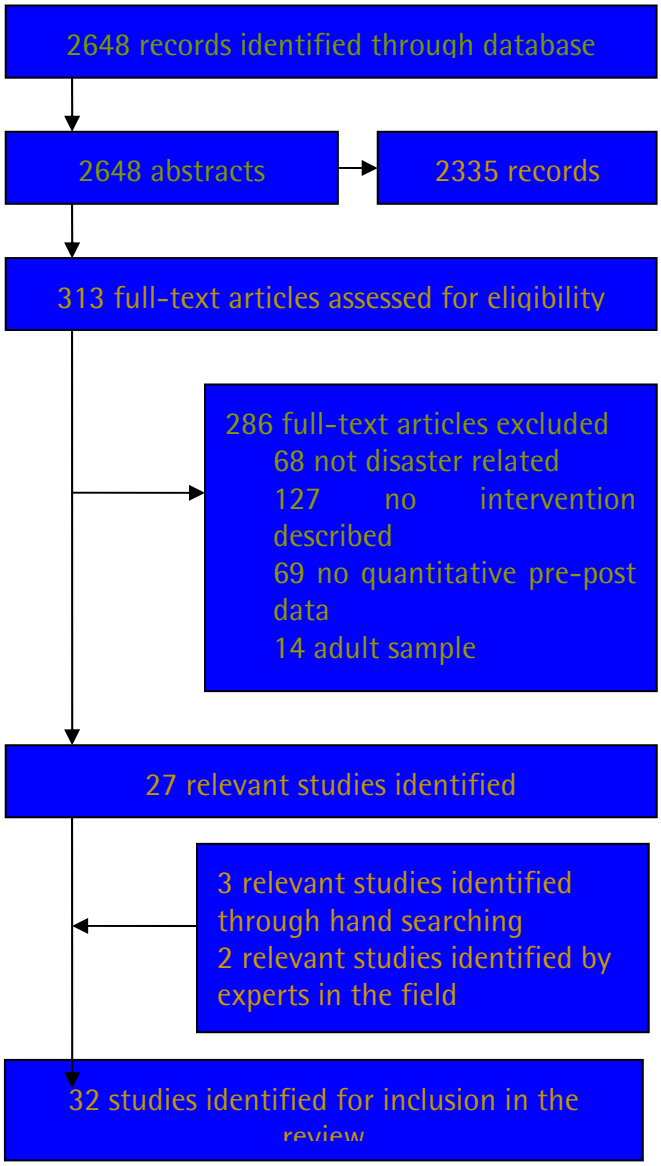
Studies were excluded from the review if:

1. they were not related to the experience of a disaster according to the definition above
2. no intervention was described
3. no quantitative pre-post data was reported
4. the study contained an adult sample
5. the study was in a language other than English
6. the study was published as part of conference proceedings

Procedure of the review

A search strategy combining various keyword and MeSH terms was used to search the PubMed, PsycInfo, PILOTS and CINAHL databases. An initial search was conducted in February 2009, and two updates using the same search strategy were conducted in June 2009 and January 2010. Figure one shows the flow of information through different phases of the review. An initial screen of all abstracts was conducted by two independent reviewers to eliminate completely irrelevant abstracts and identify potentially relevant articles. Of the 2648 abstracts initially screened, the full-texts of 286 articles were obtained and examined against the inclusion criteria. 27 studies were identified as relevant for inclusion in the review. Review articles were also identified and examined for relevant studies, three of which were identified using this method. Two additional studies were identified for inclusion following personal communication with experts in the field, resulting in the identification of 32 studies for inclusion in the review. Coding and data extraction was carried out by 2 independent coders.

Figure 1: Flow of information through different stages of the review



Results

32 relevant studies were identified in the review.

3 of the intervention programs were conducted in both school and clinic settings, 18 in schools, 6 in clinics, 1 in a private home and 1 in a community refugee camp. The setting was not specified in 3 studies.

The quality of the evidence provided by each study was rated according to the following criteria, adapted from the NHRMC[1] and Joanna Briggs Institute[2]:

Level	Type of evidence
A	Randomised controlled trial (must use a control group that does not contain the 'active' elements of the intervention under investigation)
B	Controlled study, but not randomised (must use a control group that does not contain the 'active' elements of the intervention under investigation)
C	Pre-post design (no control group), single case studies
D	Minimal evidence based on testimonials or opinion of respected authorities, based on clinical experience, descriptive studies or reports of expert committees.
E	Program/intervention description only

[1] National Health and Medical Research Council (NHMRC). (2000). How to use the evidence: assessment and application of scientific evidence. Handbook series on preparing clinical practice guidelines, Commonwealth of Australia.

[2] Joanna Briggs Institute. (2000). Changing Practice: Appraising Systematic Review

Conclusions

Overall, the literature suggests that various interventions are effective in alleviating symptoms of PTSD, trauma and psychological distress in young people. The most commonly investigated interventions were CBT-based, however considerable heterogeneity was observed across study samples, intervention types, and study quality, which hinders the generalisability of the results. Many of the studies published prior to 2000 rely heavily on case design, and do not adequately describe study characteristics. More recent studies utilise more rigorous methodology and reporting. The results of many of the included studies should be considered with caution as many do not employ suitable control groups, blinding or randomisation procedures.

There are many challenges in investigating this population due to the nature of the trauma and disruption caused by disasters. Areas for further investigation include broader outcome domains such as psychosocial functioning, and the impact of family and community factors on the recovery of young people exposed to disasters, particularly in the longer term.

Treatment	Description	Study	Quality of evidence^	Age group: 0-6 years 6-12 years 13-18 years	Setting	Delivered by...	Disaster
Cognitive behavioural therapy (CBT)	Cognitive behavioural treatments typically involve a number of elements: Psychoeducation (learning about posttraumatic symptoms, how to identify and rate feelings and thoughts); Relaxation techniques (breathing retraining, progressive muscle relaxation, guided imagery); Cognitive restructuring (identifying and modifying unhelpful or irrational thinking patterns, positive self-talk); Affect regulation (how to effectively cope with and manage strong emotion); and Exposure and dealing with avoidance behaviours. CBT can be manualised and delivered both individually and in group settings.	Cohen (2009) Scheeringa (2008) Jaycox (2010)	C C C	6-12 years 0-6 years 6-12 years, 13-18 years	School/clinic Clinic School/clinic	Therapist Mental health clinician Therapist	Hurricane
		Giannopoulou (2006) Shooshtary (2008) Wolmer (2003) Wolmer (2005)	C B C C	6-12 years 6-12 years, 13-18 years 6-12 years 6-12 years, 13-18 years	Clinic Clinic School School	Psychologist/Psychiatrist Psychologist Teacher Teacher	Earthquake
		Brown (2006)	B	6-12 years, 13-18 years	School/clinic	Social worker	Terrorist attack (9/11)
		Bergera (2009)	A	6-12 years, 13-18 years	School	Teachers	Tsunami
		Yule (1992)	B	6-12 years, 13-18 years	School	Not specified	Shipping disaster
Multiple approaches*	This category covers a range of different treatments used either individually or in combination with one another. These treatment approaches include: ▪ Play and other recreational therapies (toys, sand play)	Chemtob (2002a) Shelby (1994) Russoniello (2008)	A C C	6-12 years 0-6 years, 6-12 years 6-12 years	School Clinic School	School counsellor Therapist Allied health students	Hurricane
		Galante (1986) Karairmak (2008) Shen (2002)	C A A	6-12 years 6-12 years, 13-18 years 6-12 years	School Not specified School	Not specified Not specified School counsellor	Earthquake
		Satapathy (2006)	C	6-12 years	Private home	Allied health professional	School fire disaster

	▪ Art therapy (colouring, drawing, clay-making) ▪ Musical games, storytelling, group discussions	Rousseau (2009)	B	0-6 years	School	Art therapist	Tsunami
Eye movement desensitisation and reprocessing (EMDR)	Eye movement desensitisation and reprocessing (EMDR) is a client-paced exposure treatment incorporating psychodynamic principles. Sets of eye movements (or hand tapping) are done while concentrating on trauma-related images, memories, thoughts and sensations.	Chemtob (2002b) Greenwald (1994)	A C	6-12 years 6-12 years	School Clinic	Psychologist Psychologist	Hurricane
		Aduriz (2009)	C	6-12 years, 13-18 years	School	Mental health clinician	Flood
Massage Therapy	Massage therapy involves the manipulation of soft tissue in the body. Treatment in this particular study entailed moderate pressure and smooth stroking movements for 5 min periods up and down the neck, across the shoulders and down the back.	Field (1996)	A	6-12 years	School	Massage therapy students	Hurricane
Trauma/grief focused psychotherapy	Trauma/grief focused psychotherapy is a specialised treatment targeting the experience	Salloum (2008)	C	6-12 years	School	Social worker	Hurricane
		Goenijian (1997)	B	6-12 years, 13-18 years	School	Mental health clinician	Earthquake

	of grief and trauma due to death, disaster and/or violence. It often involves the combination of CBT and narrative therapies to address trauma and loss issues. The intervention aims to help children learn more about grief and traumatic reactions, express thoughts and feelings about what happened, and reduce traumatic stress symptoms.	Vijayakumar (2006)	B	6-12 years, 13-18 years	Not specified	Psychologist	Tsunami
Client-centred therapy	In client-centred therapy (CCT) the therapist provides assistance via a belief in the person as valuable, worthwhile, and fully equipped to understand his/her life. The dynamic interpersonal aspects of the approach are essential for change and aided through the therapist's active use of listening, clarifying, accurately reflecting, and most importantly, accepting.	Goodman (2004)	C	13-18 years	Clinic	Psychologist	Terrorist attack (9/11)

Catastrophic Stress Intervention	The catastrophic stress intervention (CSI) is a long-term psychosocial nursing intervention targeting adolescents who have been exposed to catastrophic stress. The intervention attempts to provide cognitive understanding about stress and coping, and helps to increase the adolescent's self-efficacy and social support. The intervention consists of three sessions per year, each focused on a different skill (i.e. coping, self-efficacy and social support). Methods include problem-solving, role-play, art and visual imagery.	Hardin (2002)	B	13-18 years	School	Psychiatric nurse	Hurricane
Exposure-based/behavioural approaches	Exposure-based techniques encourage the person to directly experience the anxiety or fear associated with a trauma in a controlled environment until the fear subsides or no longer causes	Tarnanas (2004)	C	6-12 years, 13-18 years	School	Research worker	Earthquake
		Ronan (1999)	B	6-12 years, 13-18 years	School	Psychologist and research worker	Volcanic eruption
		Catani (2009)	C	6-12 years, 13-18 years	Community/ refugee camp	Teacher	Tsunami

	distress or panic. For example, a narrative exposure-based treatment might involve constructing a detailed chronological account of the child's traumatic experiences, and then asking for current and past emotional, physiological, cognitive, and behavioural reactions to this trauma. The child is encouraged to relive these emotions while narrating their story.	Weems (2009)	A	13-18 years	School	Psychologist	Hurricane
Hypnosis	Hypnosis involves an inducing a meditative or trance-like state. In this particular study, spiritual-hypnosis assisted therapy was used with children to relax them and once they were under hypnosis, children were guided through suggestions related to imagining and visualising the traumatic event in a natural way (letting the image come to them instead of forcing the memory). They were encouraged to release all emotional burdens and to re-experience hidden emotions.	Lesmana (2009)	A	6-12 years	Not specified	Psychiatrist/spiritual healer	Terrorist attack (Bali)

*treatment components include recreational therapies, art, drawing, and play

^Quality of evidence is based on the following criteria, adapted from the NHRMC[1] and Joanna Briggs Institute[2]:

Level	Type of evidence

A	Randomised controlled trial (must use a control group that does not contain the 'active' elements of the intervention under investigation)
B	Controlled study, but not randomised (must use a control group that does not contain the 'active' elements of the intervention under investigation)
C	Pre-post design (no control group), single case studies
D	Minimal evidence based on testimonials or opinion of respected authorities, based on clinical experience, descriptive studies or reports of expert committees.
E	Program/intervention description only

[1] National Health and Medical Research Council (NHMRC). (2000). How to use the evidence: assessment and application of scientific evidence. Handbook series on preparing clinical practice guidelines, Commonwealth of Australia.
[2] Joanna Briggs Institute. (2000). Changing Practice: Appraising Systematic Reviews.

Cognitive behavioural therapy (CBT)

What is it?

Cognitive behavioural treatments typically involve a number of elements: Psychoeducation (learning about posttraumatic symptoms, how to identify and rate feelings and thoughts); Relaxation techniques (breathing retraining, progressive muscle relaxation, guided imagery); Cognitive restructuring (identifying and modifying unhelpful or irrational thinking patterns, positive self-talk); Affect regulation (how to effectively cope with and manage strong emotion); and Exposure and dealing with avoidance behaviours. CBT can be manualised and delivered both individually and in group settings.

Summary of evidence:

One randomised and three non-randomised controlled trials of CBT have been conducted with children and adolescents exposed to the following types of disasters: earthquake, hurricane, tsunami and shipping disaster. Findings from the controlled trials suggest that CBT is effective in reducing PTSD symptoms (both immediately following treatment and up to 10 months later), and that it may be more beneficial for children with more severe symptomatology. Results from lower quality studies and single case studies also suggest that CBT is effective in reducing PTSD symptoms in children exposed to hurricane and earthquake, and improving daily functioning in children exposed to earthquake; however, one study (Wolmer, 2003) found that treatment was associated with an increase in grief symptoms.

Key references:

- Berger, R., & Gelkoph, M. (2009). School-based intervention for the treatment of tsunami-related distress in children: A quasi-randomized controlled trial. Psychotherapy and Psychosomatics, 78, 364-371.
- Brown, E. J., McQuaid, J., Farina, L., Ali, R., & Winnick-Gelles, A. (2006). Matching Interventions to Children's Mental Health Needs: Feasibility and Acceptability of a Pilot School-Based Trauma Intervention Program. Education & Treatment of Children Vol 29(2) May 2006, 257-286.
- Cohen, J. A., Jaycox, L. H., Walker, D. W., Mannarino, A. P., Langley, A. K., & DuClos, J. L. (2009). Treating traumatized children after Hurricane Katrina: Project Fleur-de Lis. Clinical Child and Family Psychology Review 12, 55-64.
- Giannopoulou, I., Dikaiakou, A., & Yule, W. (2006). Cognitive-behavioural group intervention for PTSD symptoms in children following the Athens 1999 earthquake: a pilot study. Clinical Child Psychology and Psychiatry, vol. 11, no. 4, pp. 543-553.
- Jaycox, L. H., Cohen, J. A., Mannarino, A. P., Walker, D. W., Langley, A. K., Gegenheimer, K. L., et al. (2010). Children's mental health care following Hurricane Katrina: A field trial of trauma-focussed psychotherapies. Journal of Traumatic Stress, 23(2), 223-231.
- Scheeringa, M. S., Salloum, A., Arnberger, R. A., Weems, C. F., Amaya-Jackson, L., & Cohen, J. A. (2007). Feasibility and effectiveness of cognitive-behavioral therapy for posttraumatic stress disorder in preschool children: Two case reports. Journal of Traumatic Stress. Vol, 20(4), 631-636.
- Shooshtary, M. H., Panaghi, L., & Moghadam, J. A. (2008). Outcome of cognitive behavioral therapy in adolescents after natural disaster.
- Wolmer, L., Laor, N., Dedeoglu, C., Siev, J., & Yazgan, Y. (2005). Teacher-mediated intervention after disaster: a controlled three-year follow-up of children's functioning. J Child Psychol Psychiatry, 46(11), 1161-1168.
- Wolmer, L., Laor, N., & Yazgan, Y. (2003). School reactivation programs after disaster: could teachers serve as clinical mediators?
- Yule, W. (1992). Posttraumatic stress disorder in child survivors of shipping disasters: The sinking of the Jupiter. Psychotherapy and Psychosomatics, 57, 200-205.

Multiple approaches

What is it?

This category covers a range of different treatments used either individually or in combination with one another. These treatment approaches include:

- Play and other recreational therapies (toys, sand play)
- Art therapy (colouring, drawing, clay-making)
- Musical games, storytelling, group discussions

Summary of evidence:

There have been two randomised controlled trials and one controlled trial of these treatment approaches. A number of studies have found positive results (reductions in children's reports of trauma related to hurricane, lower rates of worry and suicide risk in children exposed to earthquake, and emotional and behavioural symptoms in children exposed to tsunami). However, one study found that an activity based fear reduction intervention was not effective for reducing fears in earthquake victims (Karairmak). Single case studies and lower quality studies show lower rates of fear and hyperarousal in children exposed to hurricane, decreases in earthquake related fears, and reduced post-traumatic symptoms, anxiety symptoms, and negative affect in a child exposed to a school fire disaster.

Key references:

- Chemtob, C. M., Nakashima, J. P., & Hamada, R. S. (2002a). Psychosocial intervention for postdisaster trauma symptoms in elementary school children: a controlled community field study. Arch Pediatr Adolesc Med, 156(3), 211-216.
- Galante, R. (1986). An epidemiologial study of psychic trauma and treatment effectiveness after a ntural disaster. Journal of the American Academy of Child Psychiatry, 25, 357-363.
- Karairmak, O., & Aydin, G. (2008). Reducing earthquake-related fears in victim and nonvictim children. Journal of Genetic Psychology, 169(2), 177-185.
- Rousseau, C., Benoit, M., Lacroix, L., & Gauthier, M.-F. (2009). Evaluation of a sandplay program for preschoolers in a multiethnic neighborhood. Journal of Child Psychology and Psychiatry, 50(6), 743-750.
- Russoniello, C., O'Brien, K., McGee, S., & Skalko, T. (2008). Reducing symptoms of posttraumatic stress in children after a natural disaster: a recreational therapy intervention. Annual in Therapeutic Recreation, 16, 15-30.
- Satapathy, S., & Walia, A. (2006). Intervening with the process of recovery from a traumatic life event: case study of a child victim of a school fire disaster in India.
- Shelby, J. (1994). Crisis intervention with children following Hurricane Andrew: a comparison of two treatment approaches. University of Miami.
- Shen, Y.-J. (2002). Short-term group play therapy with Chinese earthquake victims: Effects on anxiety, depression and adjustment. International Journal of Play Therapy, 11(1), 43-63.

Eye movement desensitisation and reprocessing (EMDR)

What is it?

Eye movement desensitisation and reprocessing (EMDR) is a client-paced exposure treatment incorporating psychodynamic principles. Sets of eye movements (or hand tapping) are done while concentrating on trauma-related images, memories, thoughts and sensations.

Summary of evidence:

One randomised controlled trial found this treatment effective in reducing PTSD, depression and anxiety symptoms in children exposed to hurricane. Two lower quality studies found lower distress, increased sense of happiness, improved concentration and school performance, more cooperative and responsible behaviour, less emotional reactivity, and better sibling relationships in children exposed to hurricane, and reduced PTSD symptoms in children exposed to flood.

Key references:

- Aduriz, M. E., Bluthgen, C., & Knopfler, C. (2009). Helping child flood victims using group EMDR intervention in Argentina: Treatment outcome and gender differences. International Journal of Stress Management, 16(2), 138-153.
- Chemtob, C. M., Nakashima, J., & Carlson, J. G. (2002b). Brief treatment for elementary school children with disaster-related posttraumatic stress disorder: a field study. J Clin Psychol, 58(1), 99-112.
- Greenwald, R. (1994). Applying eye movement desensitization and reprocessing (EMDR) to the treatment of traumatized children: five case studies. Anxiety Disorders Practice Journal, vol. 1, no. 2, pp. 83-97.

Massage therapy

What is it?

Massage therapy involves the manipulation of soft tissue in the body. Treatment in this particular study entailed moderate pressure and smooth stroking movements for 5 min periods up and down the neck, across the shoulders and down the back.

Summary of evidence:

One study has found massage therapy effective for reducing anxiety, depression and salivary cortisol, and increasing relaxation in children exposed to hurricane.

Key references:

- Field, T., Seligman, S., Scafidi, F., & Schanberg, S. (1996). Alleviating posttraumatic stress in children following Hurricane Andrew. Journal of Applied Developmental Psychology. Vol, 17(1), 37-50.

Trauma/grief focused psychotherapy

What is it?

Trauma/grief focused psychotherapy is a specialised treatment targeting the experience of grief and trauma due to death, disaster and/or violence. It often involves the combination of CBT and narrative therapies to address trauma and loss issues. The intervention aims to help children learn more about grief and traumatic reactions, express thoughts and feelings about what happened, and reduce traumatic stress symptoms.

Summary of evidence:

One non-randomised controlled study found reduced PTSD and depression symptoms at 3 years following treatment in children exposed to earthquake. Another controlled study found reductions in hyperactivity only in a sample of children exposed to tsunami. A lower quality study found reduced symptoms of PTSD, depression, traumatic grief and distress in a sample of children exposed to hurricane.

Key references:

- Goenjian, A. K., Karayan, I., Pynoos, R. S., Minassian, D., Najarian, L. M., Steinberg, A. M., et al. (1997). Outcome of psychotherapy among early adolescents after trauma. American Journal of Psychiatry, vol. 154, no. 4, pp. 536-542.
- Salloum, A., & Overstreet, S. (2008). Evaluation of individual and group grief and trauma interventions for children post disaster. J Clin Child Adolesc Psychol, 37(3), 495-507.
- Vijayakumar, L., Kannan, G. K., Ganesh Kumar, B., & Devarajan, P. (2006). Do all children need intervention after exposure to tsunami? Int Rev Psychiatry, 18(6), 515-522.

Client-centred therapy

What is it?

In client-centred therapy (CCT) the therapist provides assistance via a belief in the person as valuable, worthwhile, and fully equipped to understand his/her life. The dynamic interpersonal aspects of the approach are essential for change and aided through the therapist's active use of listening, clarifying, accurately reflecting, and most importantly, accepting.

Summary of evidence:

A single case study has found improved interest in activities, ability to experience strong feeling, concentration and sleep, and decreased irritability and arousal in a child exposed to the 9/11 terrorist attack.

Key references:

- Goodman, R. F., Morgan, A. V., Juriga, S., & Brown, E. J. (2004). Letting the story unfold: A case study of client-centered therapy for childhood traumatic grief. Harvard Review of Psychiatry Vol 12(4) Jul-Aug 2004, 199-212.

Catastrophic stress intervention

What is it?

The catastrophic stress intervention (CSI) is a long-term psychosocial nursing intervention targeting adolescents who have been exposed to catastrophic stress. The intervention attempts to provide cognitive understanding about stress and coping, and helps to increase the adolescent's self-efficacy and social support. The intervention consists of three sessions per year, each focused on a different skill (i.e. coping, self-efficacy and social support). Methods include problem-solving, role-play, art and visual imagery.

Summary of evidence:

One controlled study has found this treatment effective for reducing mental distress in children exposed to hurricane.

Key references:

- Hardin, S. B., Weinrich, S., Weinrich, M., Garrison, C., Addy, C., & Hardin, T. L. (2002). Effects of a long-term psychosocial nursing intervention on adolescents exposed to catastrophic stress. Issues Ment Health Nurs, 23(6), 537-551.

Exposure-based/behavioural approaches

What is it?

Exposure-based techniques encourage the person to directly experience the anxiety or fear associated with a trauma in a controlled environment until the fear subsides or no longer causes distress or panic. For example, a narrative exposure-based treatment might involve constructing a detailed chronological account of the child's traumatic experiences, and then asking for current and past emotional, physiological, cognitive, and behavioural reactions to this trauma. The child is encouraged to relive these emotions while narrating their story.

Summary of evidence:

One randomised controlled trial has found this treatment effective in reducing test anxiety and symptoms of PTSD in children exposed to hurricane. A controlled study has found positive results for PTSD symptoms and coping in children exposed to volcanic eruption. Two lower quality studies found improved problem and emotion focused coping in children exposed to earthquake, and remission of PTSD in children exposed to tsunami.

Key references:

- Catani, C., Kohiladevy, M., Ruf, M., Schauer, E., Elbert, T., & Neuner, F. (2009). Treating children traumatized by war and Tsunami: A comparison between exposure therapy and meditation-relaxation in North-East Sri Lanka. BMC Psychiatry, 9, 22.
- Ronan, K., & Johnston, D. (1999). Behaviourally-based interventions for children following volcanic eruptions: an evaluation of effectiveness. Disaster Prevention and Management, 8(3), 169-176.
- Tarnanas, I. A., & Manos, G. (2004). A Clinical protocol for the development of virtual reality behavioral training in disaster exposure and relief. Annual Review of CyberTherapy and Telemedicine. Vol, 2, 71-83.
- Weems, C. F., Taylor, L. K., Costa, N. M., Marks, A. B., Romano, D. M., Verrett, S. L., et al. (2009). Effect of a school-based test anxiety intervention in ethnic minority youth exposed to Hurricane Katrina. Journal of Applied Developmental Psychology, 30, 218-226.

Hypnosis

What is it?

Hypnosis involves an inducing a meditative or trance-like state. In this particular study, spiritual-hypnosis assisted therapy was used with children to relax them and once they were under hypnosis, children were guided through suggestions related to imagining and visualising the traumatic event in a natural way (letting the image come to them instead of forcing the memory). They were encouraged to release all emotional burdens and to re-experience hidden emotions.

Summary of evidence:

One randomised controlled trial has found hypnosis effective for reducing PTSD symptoms based on the DSM-IV in a sample of children exposed to terrorist attacks in Bali.

Key references:

- Lesmana, C. B. J., Suryani, L. K., Jensen, G. D., & Tiliopoulos, N. (2009). A spiritual-hypnosis assisted treatment of children with PTSD after the 2002 Bali terrorist attack. American Journal of Clinical Hypnosis, 52(1), 23-34.