

*Children's Reactions to Disaster
and Terrorism: Implications for
Treatment and Prevention*

Annette M. La Greca, Ph.D.

Professor of Psychology and Pediatrics

University of Miami

alagreca@miami.edu

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Hurricane Andrew: August 24, 1992

- Category 5 Hurricane; sustained winds exceeding 160 mph
- Devastated a 400 square mile area of So. Dade
- Over 150,000 homes severely damaged or destroyed
- Rebuilding costs exceeded \$30 billion
- By far, most costly disaster in US history

Partial List of Major Disasters

1992-1996

- **Natural Disasters**

- **Hurricane Andrew, South Florida, 1992**
- **Hurricane Iniki, Hawaii, 1992**
- **Midwest Floods, 1993**
- **Northridge Earthquake, CA, 1994**
- **Tropical Storm Alberto (flooding), GA, FL, 1994**
- **Severe Floods, Midwestern USA, 1994**
- **Hurricane Erin, FL, 1995**
- **Hurricane Opal, Southeastern US, 1995**
- **Hurricanes Bertha and Fran, NC, 1996**

Partial List of Major Disasters

1992-1996

- **Terrorist Attacks**
 - **Bombing of World Trade Center, 1993**
 - **Bombing of Federal Building, Oklahoma City, 1995**
 - **Bomb explosion, Summer Olympics, Atlanta, 1996**
- **Mass Transportation Disasters**
 - **American Airlines, air disaster, 1995**
 - **US Airlines, air disaster, 1995**
 - **Value Jet, air disaster, 1996**
 - **TWA, air disaster, NY, 1996**
- **Human-Made Disasters**
 - **Laguna Beach Firestorm, CA, 1993**

Nature of Disasters, Terrorism and Other Traumatic Events

- Threaten one's personal safety and security and/or that of loved ones
- Frightening, and outside the realm of usual experiences
- Disrupt everyday life in the short-term and often in the long-term

Key Issues to Consider

1. How do children and adolescents *react* to trauma (e.g., disasters, terrorism) ?
2. How does *exposure* affect children's reactions?
3. What factors put youth *at risk* or *protect* them from adverse reactions?
4. What kinds of *interventions* are needed and how should they change over time (post-disaster)?

How Children and Adolescents React

- Types of Reactions
- Timing of Assessment
- Persistence over Time
- Issues of Comorbidity
- Informant Issues - parent versus child

Children's Reactions Vary Over Time

- **Initial, Immediate Aftermath**
 - **Shock, Fear, Distress are common reactions**
 - **Almost all individuals directly exposed show reactions/distress**
- **First Month After Event**
 - **Acute Stress Reactions and other symptoms of stress**
 - **Most individuals directly exposed to the event are affected**
- **2 - 3 Months After Event Through the First Year****
 - **Symptoms of Posttraumatic Stress, Anxiety, Depression, etc.**
 - **More variability in terms of who is continues to be affected and who has recovered**

** Most Studied Time Frame

Initial Trauma Reactions Among Children

- **Increased worries and fears, particularly related to safety and security**
- **Changes in sleep, appetite, school performance**
- **Changes in behavior including**
 - **Increased irritability and distress**
 - **Loss of interest in activities**
 - **Problems with friends and family**

Children's Trauma Reactions

($\geq 2 - 3$ mos)

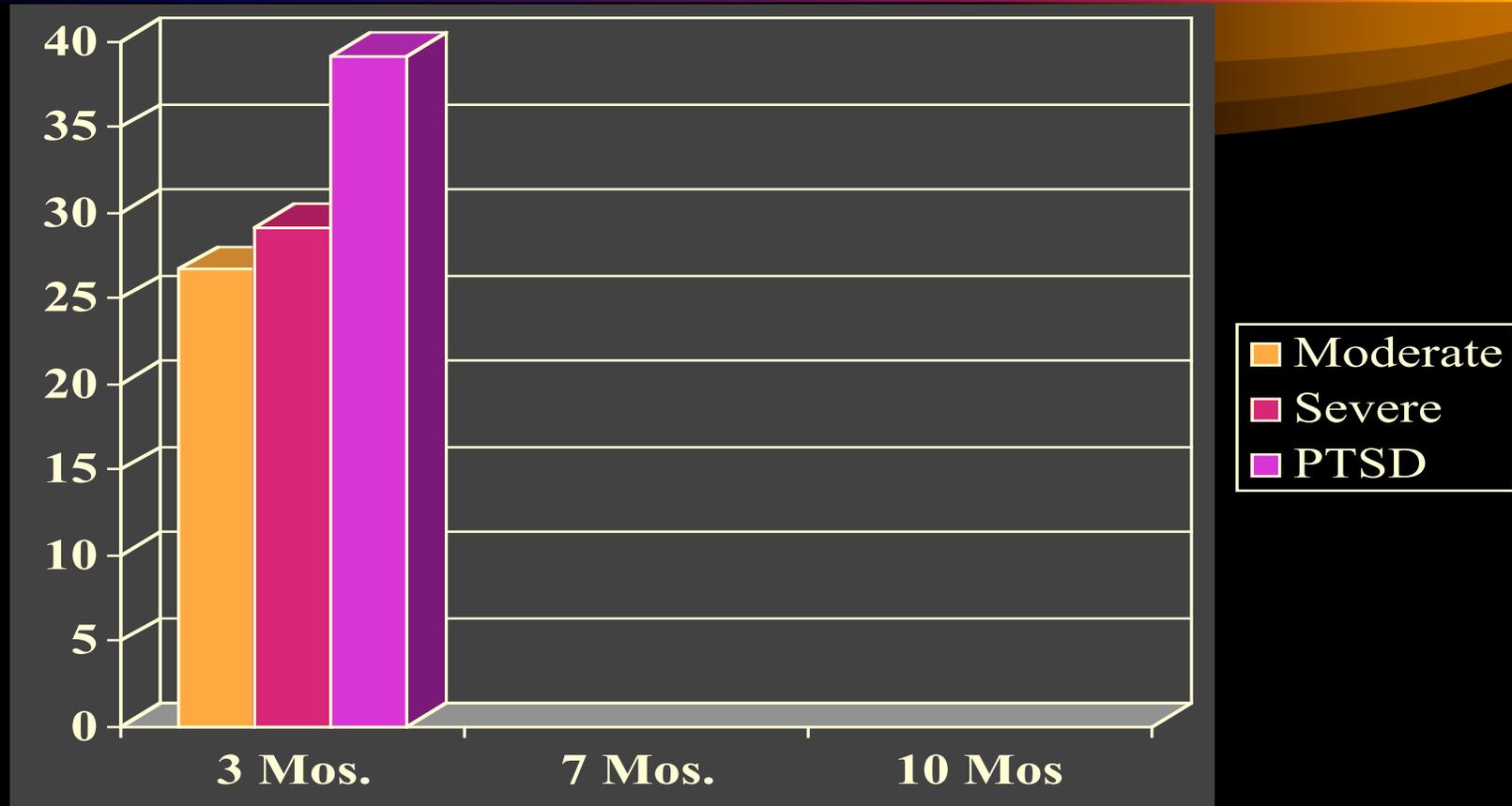
Symptoms of Posttraumatic Stress (PTS)

- Most well-studied “reaction”
- A common reaction to events such as disasters and terrorism
- Community studies suggest that 24-39% may meet criteria for PTSD in the first few months after exposure
- Subclinical levels of PTS are often high ($\geq 50\%$) the first 3 - 6 months post-disaster, and interfere with functioning
- Over time, children's reactions dissipate in most youth

Key Symptoms of PTSD

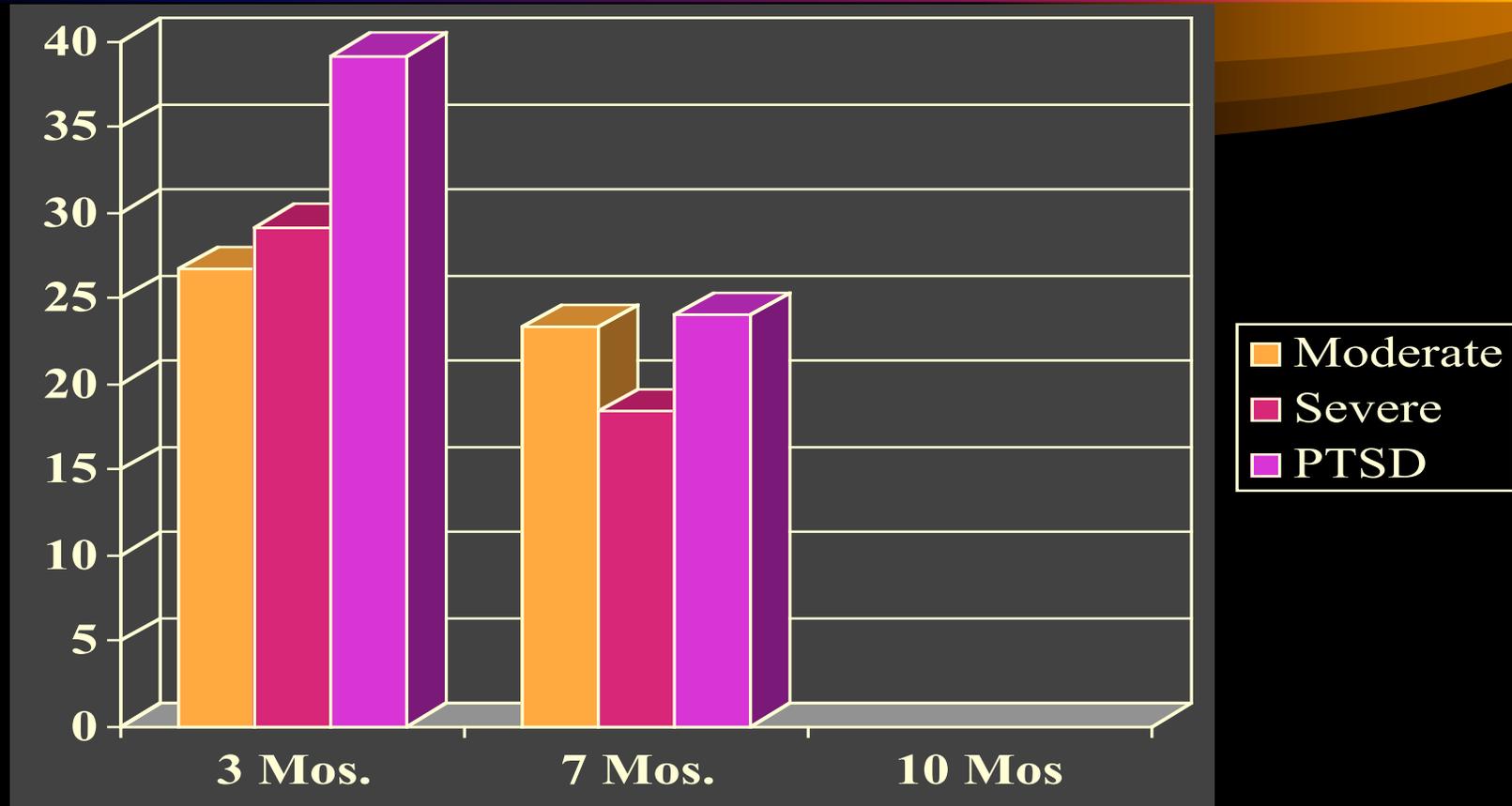
- **Re-experiencing**
 - Recurrent thoughts or dreams about the event
- **Avoidance/Numbing**
 - Avoiding reminders of the event
 - Feeling emotionally distant from others
- **Hyperarousal**
 - Nervous, jittery
 - Trouble concentrating

Children's PTS Levels Over Time (Hurricane Andrew)



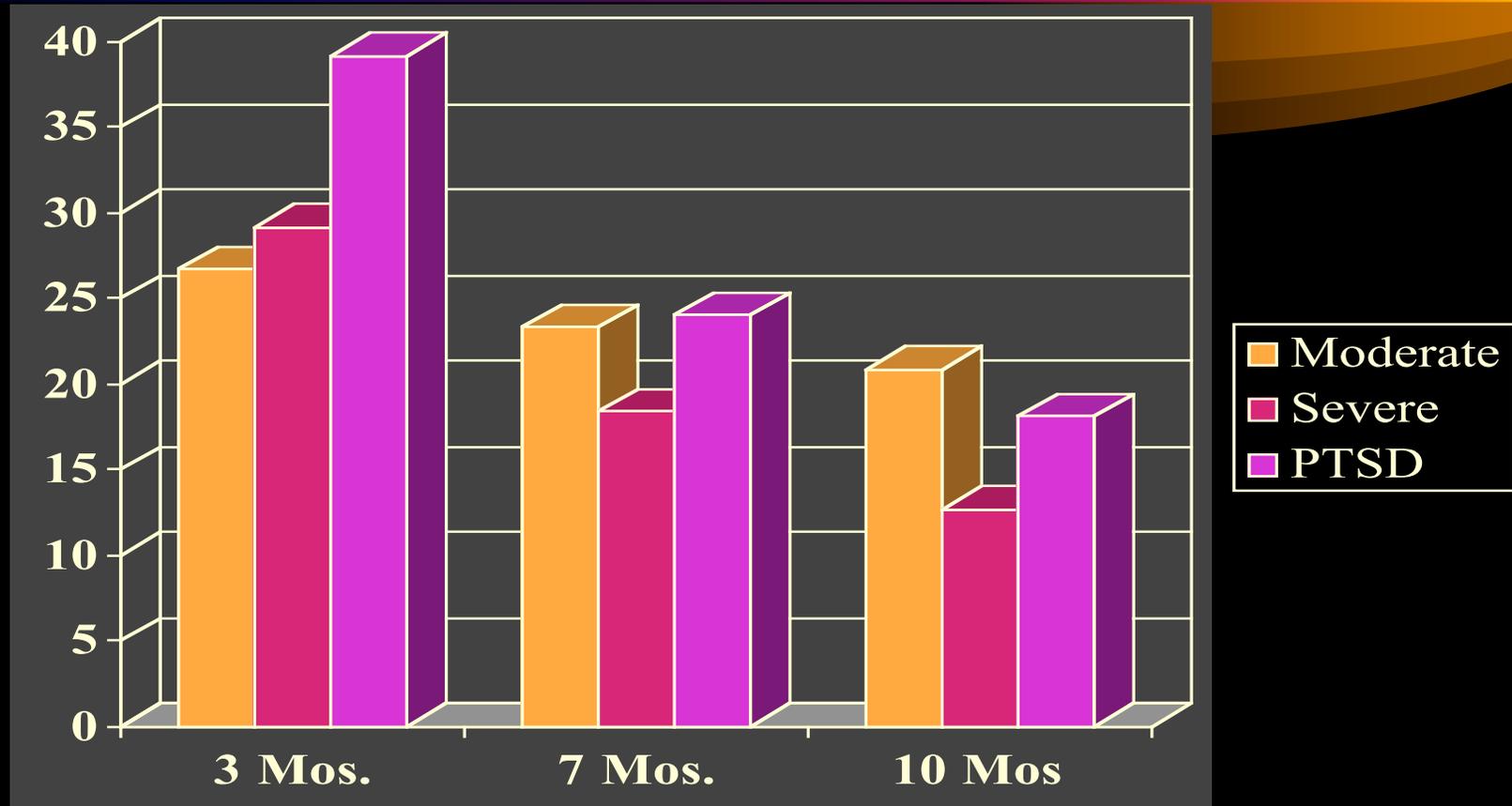
La Greca, Silverman, Vernberg & Prinstein, J Cons Clinical Psy, 1996

Children's PTS Levels Over Time (Hurricane Andrew)



La Greca, Silverman, Vernberg & Prinstein, J Cons Clinical Psy, 1996

Children's PTS Levels Over Time (Hurricane Andrew)



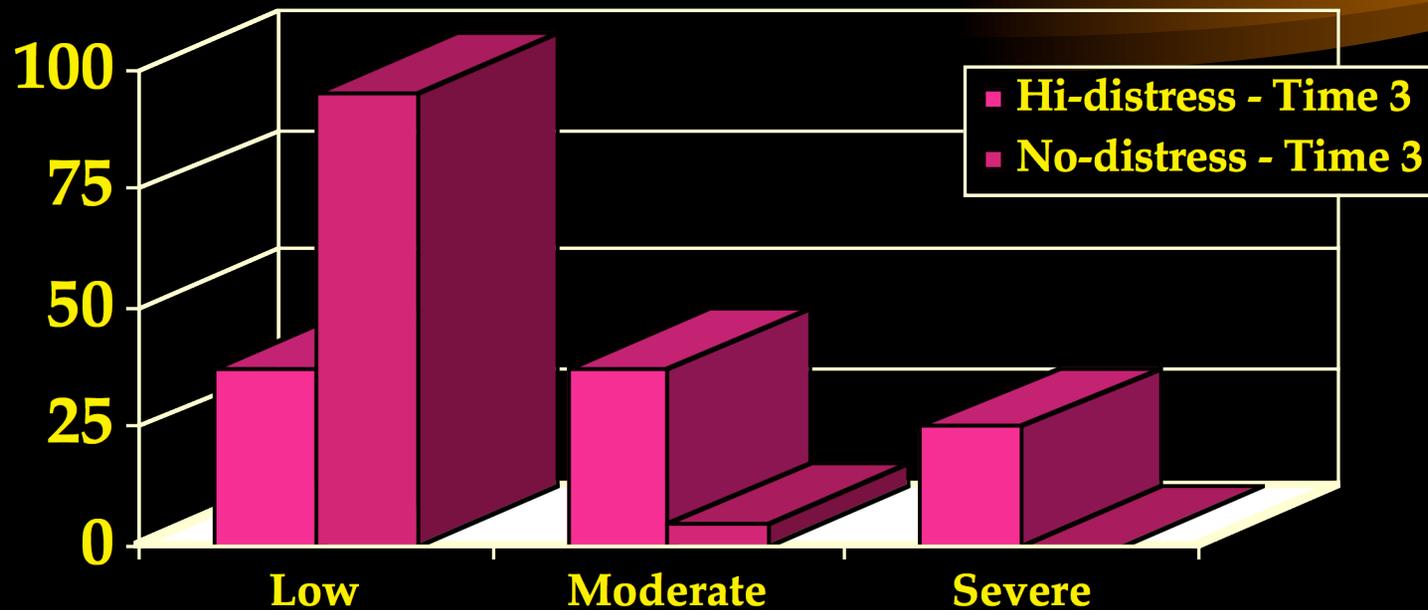
La Greca, Silverman, Vernberg & Prinstein, J Cons Clinical Psy, 1996

PTSD Symptom Clusters Over Time (Hurricane Andrew)



From La Greca et al., *J Consult Clinical Psych*, 1996

Levels of PTS Symptoms. 42 Months Post Hurricane Andrew



From Vincent, 1997

Other Common Anxiety-Related Reactions

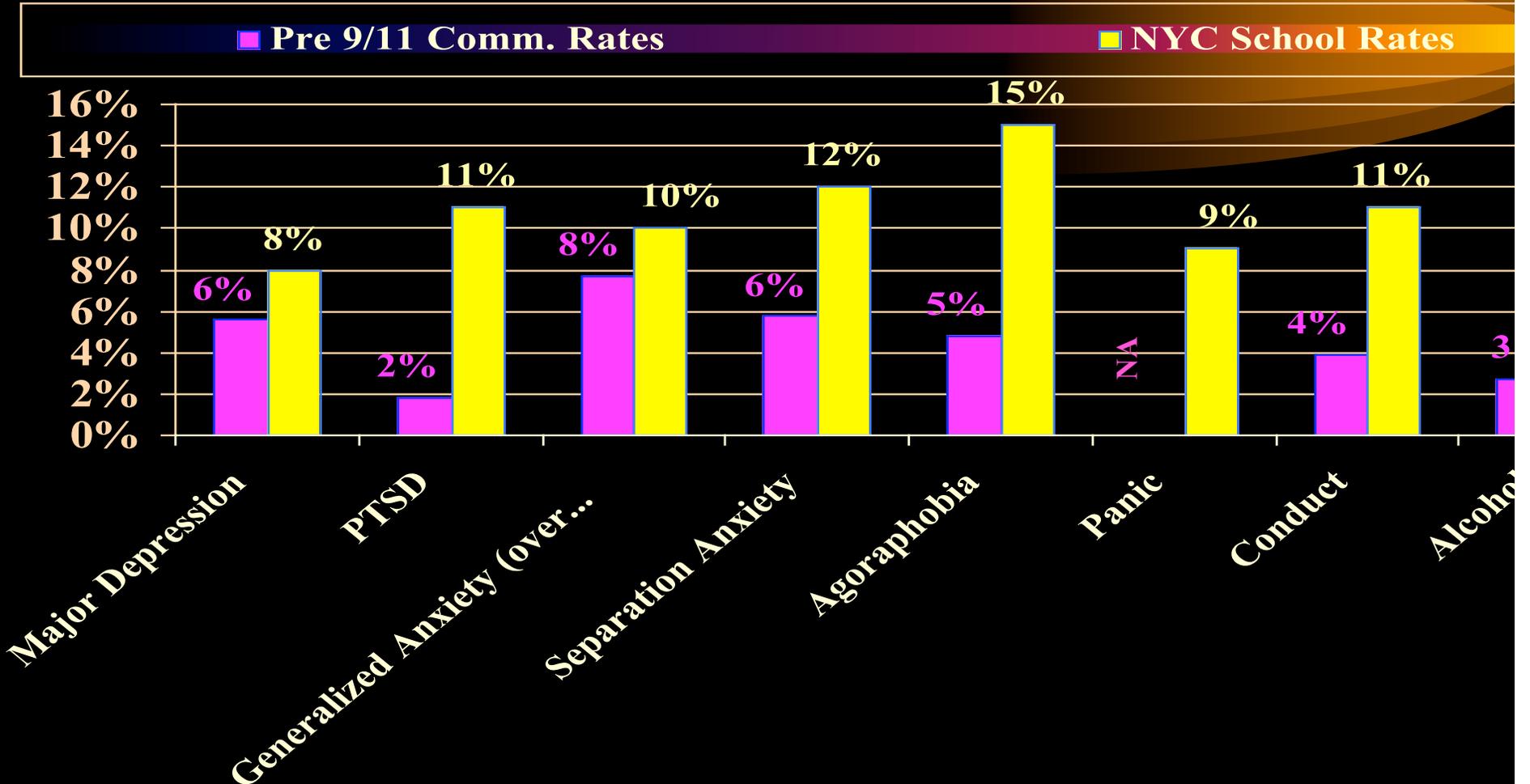
- Generalized anxiety
- Specific fears and avoidant behavior
 - Fears of flying, buildings, storms, bombs, fires, etc.
- Sleep difficulties
- Separation anxiety
 - Fear of separation from parents or loved ones; school refusal

Other Types of Reactions

- Depression
- Bereavement
- Anger
- Declines in Academic Performance/School
- Behavior Problems
- Security Concerns, Hypervigilance

See Vernberg & Vogel, 1993, J Clin Child Psych

Prevalence¹ of Mental Health Problems (probable) Post WTC Attack Among NYC Public School Students², Compared to Pre 9/11 Non-NYC Community Estimates³, Grades 4-12



- 1 Weighted to reflect sampling design. Maximum number of missing by disorder never exceeded
- 2 Assessed 6 months post 9/11.
- 3 Shaffer, D. et al (1996). MECA Study, American Academy of Child and Adolescent Psychiatry

Rates and Estimated Number of NYC public school students with specific mental health problems: 6 Mos. Post 9/11, Grades 4-12

Disorder	Rate (%)	# of Students (estimated)
PTSD	10.5	75,176
Major Depression	8.4	60,141
Generalized Anxiety	10.3	73,744
Separation Anxiety	12.3	88,064
GAD	10.3	73,744
Conduct	10.9	78,040
Panic	9.3	66,585
Agoraphobia	15.0	107,395

Comorbidity and Complex Responses

- Focus on multiple reactions and the high rates of co-morbidity among youth who are affected (e.g., anxious and depressive symptoms)
- Important to consider externalizing behaviors (e.g., conduct problems) that may co-exist and complicate treatment
- Important to address issues of grief and bereavement

Informant Issues

- **Parents and teachers often *underestimate* children's responses**
- **Parental distress is significantly related to the distress levels they report in their children**
- **Important to obtain input on reactions directly from children and adolescents.**

Children's Reactions. Implications for Assessment

- Get input from children and adolescents directly
- Evaluate a *range* of reactions, especially anxiety, fears, and depression, in addition to PTS
- Note fearful or avoidant behavior, especially in young children
- Recognize that subclinical levels of stress are common initially and may interfere with functioning
- Consider comorbidity, externalizing problems, bereavement
- Monitor children's reactions over time
- Use well-standardized assessment measures



*Questions about
Children's Reactions??*

Key Issues to Consider

1. How do children and adolescents *react* to disasters and acts of terrorism ?
2. How does *exposure* affect children's reactions?

Elements of Exposure to Trauma

- **Life Threat**
 - Perception that one's life is in danger
 - Injury to self or loved one
 - Death of loved one
- **Loss and Disruption of Everyday Life**
 - Loss of property, personal possessions, relationships
 - Loss of “way of life”

Exposure Can Occur Through.....

- **Direct Exposure**
 - Experienced or witnessed traumatic events first-hand
- **Interpersonal Exposure**
 - Loss of or injury to parent, friend, family member, acquaintance
- **Indirect Exposure**
 - TV (media) viewing

Exposure: Hurricane Andrew

- **Actual Loss of Life Not Necessary for Children to *Perceive* that their Lives are Threatened**
- **Thought Might Die/Feared for Self:**
 - Children -- 60% (Vernberg et al., 1996)
 - Adolescents -- 38% B, 46% G (Garrison et al., 1995)
- **Was Hurt:**
 - Children -- 8% (Vernberg et al., 1996)
 - Adolescents -- 10% B, 9% G (Garrison et al., 1995)

Loss and Disruption

- **Immediate Loss of Property and Possessions**
- **Immediate Disruption of Daily Activities**
- ***On-going stressors that evolve over time:***
 - **Disrupted friendships and peer networks;**
 - **Disruption of normal routines;**
 - **Moving to new home or school;**
 - **Financial burdens;**
 - **Rebuilding home, neighborhood;**
 - **Legal battles; prosecution of perpetrators,**
etc.

Loss and Disruption. Hurricane Andrew

- *568 Children (Vernberg et al., 1996, J Abnormal Psy)*
 - **61% = Home badly damaged or destroyed**
 - **55% = Clothes or toys ruined**
 - **44% = Hard to see friends because of moving**
 - **37% = Trouble getting food or water**
 - **26% = Had to move to a new place**
 - **26% = Had to go to a new school**

Worst Things That Happened Because of the Hurricane

- *“I didn’t see my mom for 2 months because I had to live with my uncle.”*
- *“No Nintendo, no friends, I didn’t have fun anymore.”*
- *“My turtle died of a heart attack.”*

Direct Exposure to Natural Disasters

- **Higher levels of direct exposure (life threat, loss/disruption) significantly predicted PTS symptoms**
 - 3 Mos. Postdisaster = 32% of variance in PTS
 - 7 Mos. Postdisaster = 20% of variance in PTS
 - 10 Mos. Postdisaster = 12% of variance in PTS

La Greca et al., 1996 and 1998, J Consult Clin Psy

Interpersonal and Indirect Exposure Following Bombing in OK City

- **Pfefferbaum et al., 2000 (*Psychiatry*)**
 - 69 youth, 2 yrs. after bomb; no direct exposure
 - Media exposure and indirect interpersonal exposure (friend who knew someone killed/injured) predicted higher PTS Sx
- **Pfefferbaum et al., 2002 (*J Urban Health*)**
 - 2000+ middle school youth, 7 weeks post bomb
 - Physical, interpersonal and media exposure predicted higher PTS
 - When peritraumatic Sx (fear, arousal, dissociation) were entered, only media exposure predicted higher PTS Sx
- **Pfefferbaum et al., 2001 (*Psychiatry*)** -- similar sample to 2002
 - TV exposure -> PTS even with no physical or emotional exposure

Conclusions about Exposure

- The more *direct* the exposure, the greater the likelihood of distress and PTS reactions
- The *media* may be a significant source of exposure and contributes to children's distress even if they are not personally exposed
- *Bereavement* adds to trauma distress, as well as to significant life disruption
- Aspects of exposure include life threat and loss/disruption



Questions About Exposure??

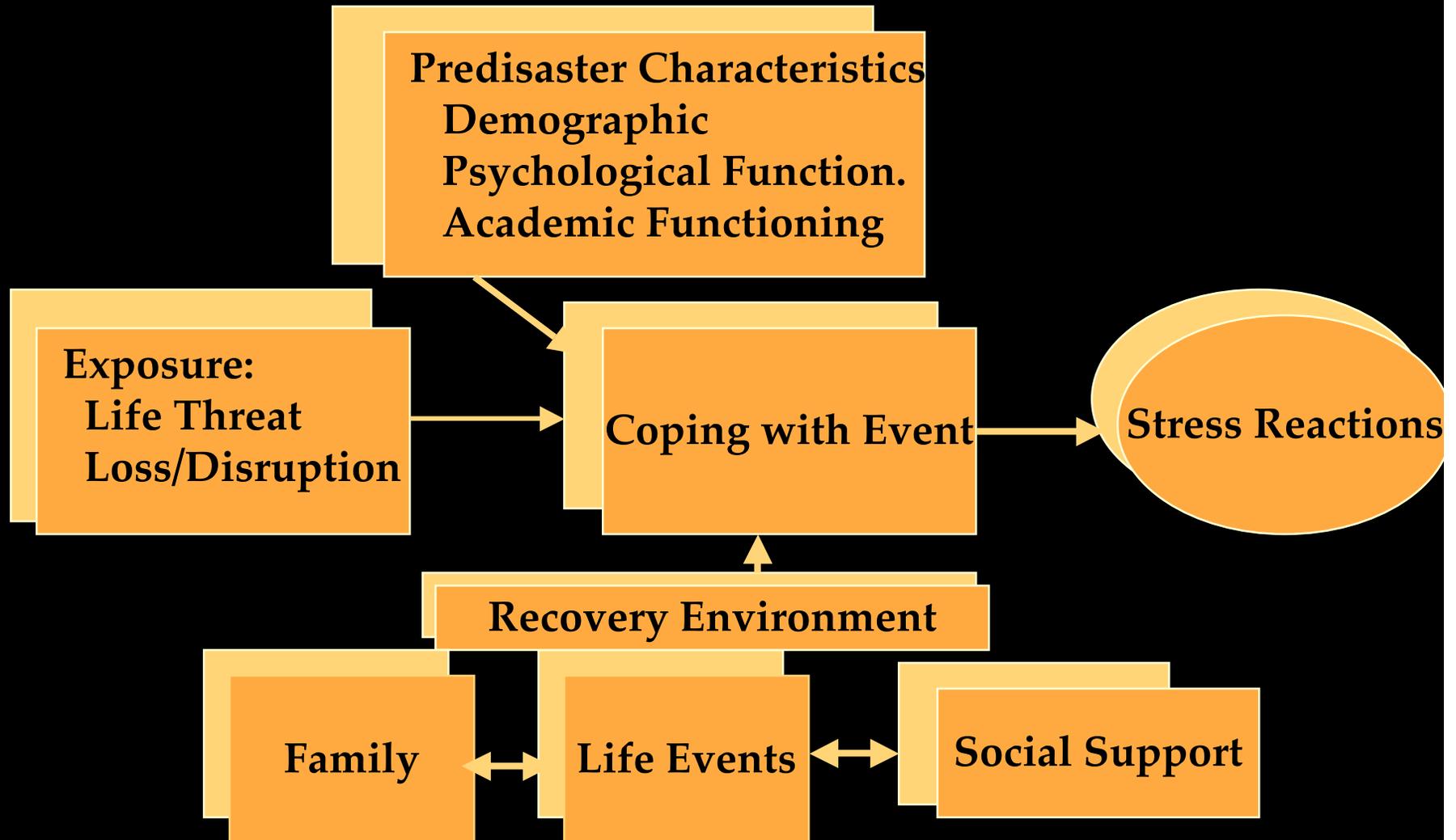
Key Issues to Consider

- 1. How do children and adolescents *react* to trauma?**
- 2. How does *exposure* affect children's reactions?**
- 3. What factors put youth *at risk* or *protect* them from adverse reactions?**

Beyond Exposure: Factors that Predict Children's Reactions

- **Pre-disaster Characteristics**
 - **Developmental Level; Gender; Ethnicity**
 - **Prior Psychological and Academic Functioning**
 - **Prior Trauma Exposure**
- **Recovery Environment**
 - **Additional Life Stress**
 - **Family Functioning**
 - **Social Support**
- **Coping Skills**

Conceptual Model



Predisaster Characteristics that Put Child At Risk for Adverse Reactions

- **Demographic Factors -- (*controlling for exposure*)**
 - Gender -- Girls report more PTS, anxiety
 - Minorities -- More stress reactions in some studies
 - Age -- Difficult to generalize
- **Prior History of Trauma**
- **Prior Psychological Characteristics***
 - Higher anxiety, depression -- More severe reactions
 - Poor academic functioning -- More severe reactions
 - Poorer psychological and family functioning

*Difficult to study

Predictors of PTS Symptoms. 3 Months Post Hurricane Andrew

- **Exposure** R^2 change = .32, $p < .001$
 - **Demographics** R^2 change = .00, ns
-
- *Anxiety Levels* R^2 change = .11, $p < .001$
 - *Inattention* R^2 change = .12, $p < .001$
 - *Academic Problems* R^2 change = .14, $p < .001$

La Greca, Silverman, & Wasserstein, *J Consult Clin Psy*, 1998

Predictors of PTS Symptoms. 7 Months Post Hurricane Andrew

- **Exposure** R^2 change = .20, $p < .01$
 - **Demographics** R^2 change = .06, ns
 - African American ($B = .27$, $p < .05$)
-
- *Anxiety Levels* R^2 change = .12, $p < .01$
 - **Inattention** R^2 change = .01, ns
 - **Academic Problems** R^2 change = .01, ns

La Greca, Silverman, & Wasserstein, *J Consult Clin Psy*, 1998

Summary of Preexisting Characteristics

- *Girls* and *minority* youth may be more vulnerable to PTS
- *Prior trauma* experiences may also contribute to to more distress
- Children with *pre-existing anxiety, depression, academic problems*, and other *behavior problems* have more difficulty after trauma

Aspects of the Recovery Environment

- **Intervening Life Events**
 - Parental separation or divorce; illness in family, etc.
- **Availability of Social Support**
 - Family, friends, teachers, classmates
- **Family Functioning**
 - Parental adjustment; family conflict
- **Child's Ability to Cope with Events**

Predictors of PTS Symptoms 10 Months After Hurricane Andrew

Exposure R^2 change = .12, $p < .001$

Demographics R^2 change = .03, $p < .05$

– Black, Hispanic (B's = .11, .16)

Life Events R^2 change = .02, $p < .001$

Social Support R^2 change = .04, $p < .01$

Coping (blame, anger) R^2 change = .03, $p < .01$

La Greca et al., *J Consult Clin Psy*, 1998

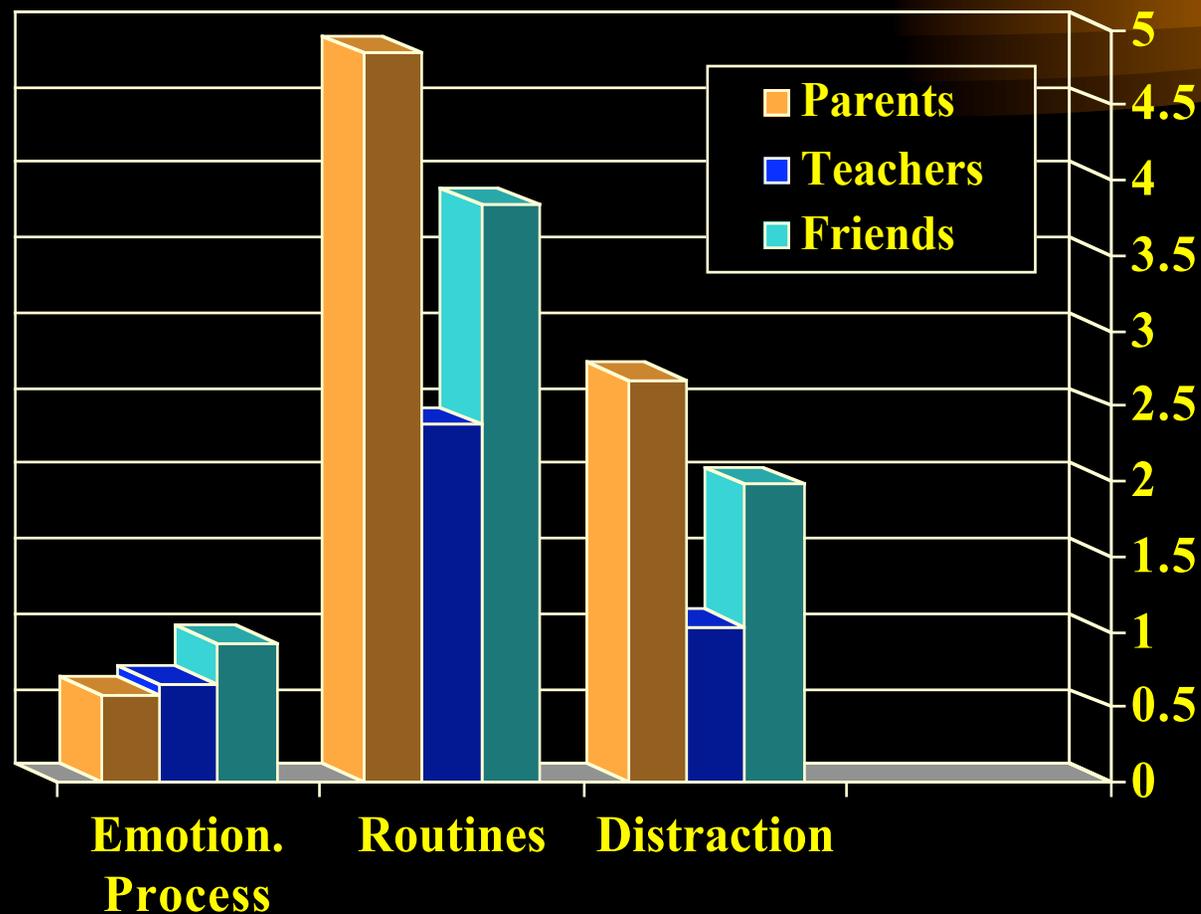
Family Reactions

- **Parents who are more distressed, report more distress in their children**
- **Following Hurricane Andrew, as well as OK City Bombing (and other events), parental distress and problems coping predicted more PTS and distress in children.**

Children's Coping

- **Children who use fewer negative strategies for coping have fewer signs of distress**
- **Hurricane Andrew:**
 - **Less blame of self and others -> significantly less PTS Sx at 10 mos post-disaster**
- **Hurricane Andrew:**
 - **Children who resumed normal roles and routines had less PTS Sx at 7 mos. post-disaster**

Children's Coping Assistance After Hurricane Andrew



Prinstein et al., 1996, *JCCP*

Summary of the Recovery Environment for Children's Reactions

- **Reactions improve (decline) over time for most**
- **Children with more persistent stress reactions have:**
 - **More intervening life events**
 - **Less social support from family and friends**
 - **Less effective coping strategies**
 - **Family members (e.g., parents) who are more affected by the disaster-event**

Implications for Intervention

- **Many children will need help over a long period after the trauma-event (not just immediately)**
- **Children with many Sx early on are more likely to have persistent distress**
- **Interventions might focus on:**
 - **Enhancing social support**
 - **Promoting effective coping strategies**
 - **Helping family members who are affected**



*Questions about
Risk and Protective Factors?*

Key Issues to Consider

- 1. How do children and adolescents *react* to trauma?**
- 2. How does *exposure* affect children's reactions?**
- 3. What factors put youth *at risk* or *protect* them from adverse reactions?**
- 4. What kinds of *interventions* are needed and how should they change over time (post-trauma)?**

Need for Mental Health Interventions

- **After community-wide events, so many children and families are affected, it becomes a public health concern**
- **Prior work suggest that many children need help by relatively few receive assistance.**

Children Who Received Counseling Following Bombing in OK City

- **Pfefferbaum et al., 1999 (*J Am Acad Child Adol Psychiatry*)**
 - 3200+ youth, assessed 7 weeks post bombing
 - Few youth (6.8% overall) sought counseling
 - Highest rates of counseling for those who lost a family member (44.4%)
 - Next highest for loss of relative (15%) or loss of friend (8%)

Some Challenges to Implementing and Evaluating Interventions

- **Post-event crisis mode leads to disorganization**
- **Difficulty establishing collaborative relations or gaining access to systems that are under stress**
- **Competition and lack of coordination among various health delivery services**
- **Stigma associated with seeking mental health services**
- *Adults who normally assist children are stressed and affected; may deny or overlook problems*

Interventions after Traumatic Events.

Acute Period (first week to 1-2 months)

- **All children may need some assistance and support**
- **High-risk youth and those with severe initial reactions need more attention and close monitoring**
- **Efforts with children should focus on:**
 - **Helping them process and understand what happened**
 - **Providing reassurance regarding safety and security**
 - **Helping children resume normal routines and relationships**
 - **Limiting media exposure to upsetting images**
 - **Helping children to identify and express their feelings**

Acute Period After Trauma.

Monitor Youth Who Are At Risk

- Youth with poor functioning *prior* to the event
 - Anxious, depressed, behavior problems *before*
 - Prior history of trauma, or recent major life events and stressors
- Youth with severe reactions during and after the event
- Youth with additional stressors during the recovery
 - Youth who have poor family/friend/social support
 - Youth whose parents and families are affected
 - Youth with more intervening life events
- Youth who have poor coping skills

Interventions after Trauma.

Long Term Recovery (2 - 12 mos.)

- **Many need assistance and support but most will gradually “recover”**
- **High-risk youth need close monitoring**
- **Needs-specific mental health interventions for children who remain distressed**
- **Interventions should focus on:**
 - **Helping children deal/cope with specific problems**
 - **Promote coping and problem solving for ongoing stressors**
 - **Maintain supportive relationships and friendships**
 - **Prepare how to handle future events**

Treatment of Trauma

Studies of Efficacy

- **Few scientifically rigorous studies**
- **Cognitive behavioral therapy has most empirical support**
- **CBT is efficacious with trauma-related symptoms**
 - **PTSD, Anxiety, Depression, Aggression**

What Can Help?

- **Reinforce ideas of safety and security**
- **Protect children from re-exposure to reminders of trauma**
- **Be mindful of adults' responses to the trauma and how this is portrayed to children**
- **Encourage children's continued involvement in school, friendships, and other enjoyable activities**
- **Maintain a predictable schedule and rules**
- **Encourage discussion of thoughts and feelings**
- **Gently correct children's misperceptions**
- **Listen to and tolerate retelling of events**

Anniversaries, Holidays, and Memorials

- **Return of traumatic reactions is common**
- **Time of Reflection**
- **Time of Commemoration**
- **Looking at positives in past year**
- **Setting goals for the future**
- **Importance of including children in the planning**

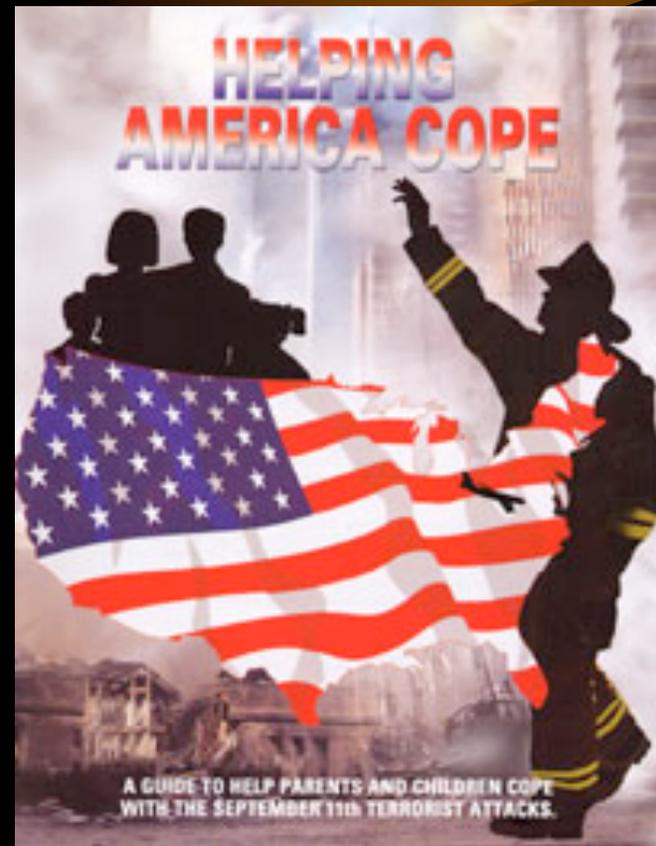
Preparedness

- **Develop Family Disaster Plan**
- **Develop Disaster Plan for Schools**
- **Develop a plan to deal with continued events and threats**

Building Resilience After September 11th, 2001

Helping America Cope

- A guide to help parents and children cope with Sept. 11 and its aftermath
- Initial Funding by BellSouth Foundation
- www.sevendippity.com
- www.psy.miami.edu



Building Resilience After September 11th, 2001

- *Helping America Cope - 1st Edition*
More than 250,000 printed copies in the first 6 months
Thousands more downloaded from website
- *Helping America Cope - Anniversary Edition*
*More than 1 million copies printed and distributed in
the NE and Washington DC area*
English and Spanish available:
www.sevendippity.com

Building Resilience After September 11th, 2001

Helping America Cope – Key Elements

- **Providing information about reactions**
- **Enhancing social support**
- **Enhancing coping skills**
 - **Things that help most children**
 - **Specific situations (fears, anger, sadness)**

Helping America Cope

Coping - Things that Help Most Children

- **Focus on positive/avoid negative coping**
- **Normal roles and routines**
- **Reduce/limit TV and media exposure**
- **Keep healthy and fit (diet, exercise)**

Helping America Cope

Coping – How to Deal with Special Situations or Reactions

- **Fears and Worries**
- **Intrusive Thoughts and Dreams**
- **Anger**
- **Loss and Sadness**

Helping America Cope

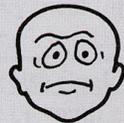
Worry Buster Activity

JOINT ACTIVITY: Develop a "Worry Buster" Plan

Along with your child, develop a "Worry Buster" plan. Use a separate sheet of paper. For each "worry" that you and your child have listed in the "worry" activities, develop a coping plan to deal with that worry. For example:

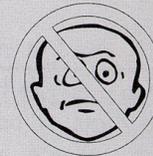
Child's Worry:

Something will happen when the child is in school and he or she won't be able to reach the parent.



Worry Buster Plan

Create an index card for your child to carry with emergency phone numbers to reach the parent. Give a copy to the teacher and school.



Worry	Worry Buster

Helping America Cope

Anniversary Edition

- **How to deal with the Anniversary**
- **More ideas on limiting TV/media exposure**
- **Enhanced section on Fears and Worries**
- **Ideas for developing a Family Disaster plan**
 - www.sevendippity.com
 - www.psy.miami.edu

Conclusions

- **Put our “science” into “practice”**
- **Obstacles include:**
 - **How to disseminate information quickly and effectively?**
 - **How to provide services that will reach those in need?**
 - **Children often overlooked in trauma/disasters**