



Published in final edited form as:

*J Marital Fam Ther.* 2008 April ; 34(2): 132–148.

## WHEN THE LEVEE BREAKS: TREATING ADOLESCENTS AND FAMILIES IN THE AFTERMATH OF HURRICANE KATRINA

Cynthia L. Rowe, PhD and Howard A. Liddle, EdD

*Department of Epidemiology and Public Health, University of Miami Miller School of Medicine*

### Abstract

Hurricane Katrina brought to the surface serious questions about the capacity of the public health system to respond to community-wide disaster. The storm and its aftermath severed developmentally protective family and community ties; thus its consequences are expected to be particularly acute for vulnerable adolescents. Research confirms that teens are at risk for a range of negative outcomes under conditions of life stress and family disorganization. Specifically, the multiple interacting risk factors for substance abuse in adolescence may be compounded when families and communities have experienced a major trauma. Further, existing service structures and treatments for working with young disaster victims may not address their risk for co-occurring substance abuse and traumatic stress reactions because they tend to be individually or peer group focused, and fail to consider the multi-systemic aspects of disaster recovery. This article proposes an innovative family-based intervention for young disaster victims, based on an empirically supported model for adolescent substance abuse, Multidimensional Family Therapy (MDFT; Liddle, 2002). Outcomes and mechanisms of the model's effects are being investigated in a randomized clinical trial with clinically referred substance-abusing teens in a New Orleans area community impacted by Hurricane Katrina.

---

The core experiences of psychological trauma are disempowerment and disconnection from others. Recovery, therefore, is based upon the empowerment of the survivor and the creation of new connections. Recovery can take place only within the context of relationships; it cannot occur in isolation. (Herman, 1997, p. 133)

Images and stories of Hurricane Katrina's young victims were captured on television news reports and magazine covers around the world for weeks after the storm and subsequent flooding. Experts predicted high rates of posttraumatic stress disorder (PTSD), depression, behavior problems, and substance abuse among Katrina's young victims in the months and years to come. While dire prognoses have been easy to generate, solutions to the overwhelming problems brought on (or perhaps brought to light) by the hurricane have not. Addressing the needs of children and families in the post-Katrina period requires sustained focus on certain key questions. There is considerable evidence to suggest that disasters create vulnerability to PTSD among children. Yet for youth directly affected by Hurricane Katrina, the pervasive and long-lasting life disruption and cumulative stress may trigger a host of other problems. Premorbid conditions may be complicated among those at risk before the storm, and youth may use substances to cope with stress and traumatic loss. The result may be an urgent need for effective integrated services in an area depleted of resources and funds. Yet little is known about how to effectively intervene with youth and families after community-wide disaster. With few notable exceptions (Boss, Beaulieu, Wileing, Turner, & LaCruz, 2003; Landau & Saul, 2004; Sargent, 2007), typical services for disaster victims and trauma survivors do not include the family. A new era dawned on August 30, 2005, when New Orleans' levees broke.

It is time for answers to Katrina's questions, and for new models that empower families through life's most unspeakable tragedies.

This article addresses a number of gaps in the current evidence base related to understanding substance abuse and other problems that may potentially surface or become exacerbated among teens in the wake of disasters such as Hurricane Katrina. While recent research has established direct links between trauma and substance abuse among teens (Dennis & Stevens, 2003), little is known about these associations in the aftermath of catastrophic events. Additionally, while cognitive behavioral therapy (CBT) interventions have shown positive effects on trauma symptoms with young disaster victims, rigorous postdisaster intervention research is rare, and few empirically based clinical guidelines exist. These interventions typically relegate parents to the role of "adjuncts" and rarely involve families in the healing process. Yet disasters impact entire communities and families (Gerrity & Steinglass, 2003), and families with compromised functioning may not be equipped to shield youth from problems such as substance abuse (Olsson et al., 2003); thus comprehensive family-based services may be needed. This article describes a systemic and comprehensive family-oriented approach that is being tested in a randomized clinical trial with substance-abusing teens impacted by Hurricane Katrina.

## Hurricane Katrina and Its Aftermath

In the early hours of Monday, August 29, 2005, one of the most powerful storms to hit the USA came ashore, devastating hundreds of miles of the Gulf Coast in four states. This "American Tragedy" (*Time*, 2005) is by far the most expensive disaster in the nation's history, with an estimated total economic impact of \$150 billion. Over 1,500 Louisiana residents died as a result of the hurricane. Families without the resources to evacuate were stranded in affected areas during the storm, and for days following the disaster, without food, water, or shelter. Many who evacuated spent weeks in overcrowded shelters. The majority were dislocated in areas around the country, disconnected from family and friends. Most have not returned. For those who have come home, the fabric of their lives has been irrevocably changed.

An estimated 500,000 Hurricane Katrina victims probably need mental health treatment (Reichgott, 2006). Yet the vast majority will not receive help, because social services were drastically cut throughout the region with insufficient income from a dwindling tax base. Neighboring parishes with less storm damage became overwhelmed with families who relocated to be able to hold their jobs and place their children in school. Surveys conducted soon after the storm indicate that the New Orleans area has lost 89% of its psychiatrists and 84% of its psychiatric beds, and the demand for mental health services is increasing (Hunter & Pope, 2006). Families and children living in poverty before Katrina face almost insurmountable odds as they try to rebuild their lives. They are at heightened risk for mental health and substance abuse problems due to stress, depleted resources and social support, and instability. Of the children of Katrina, *Newsweek* (Kantrowitz & Breslau, 2005) declared, "Some are found; all are lost."

## Adolescents and Families at Risk

Experts predict that the impact of the disaster on youth from New Orleans and surrounding parishes will be serious and long-lasting, based on consistent and strong evidence that children experience posttraumatic stress symptoms at high rates for years following natural disasters (La Greca & Silverman, in press). Adolescents may be more profoundly affected by disasters than younger children (Franks, 2004; Garrison et al., 1995; Gleser, Green, & Winger, 1981), possibly because adolescence is a tenuous developmental period in which even "scheduled" transitions create vulnerability for emotional and behavioral problems (Hagan and the Committee on Psychosocial Aspects of Child and Family Health and the Task Force on Terrorism, 2005). Considering the extensive life disruption created in the aftermath of

Hurricane Katrina and the fact that adolescents need stability and a great deal of support from parents and positive peers to successfully traverse this developmental period, their vulnerability is high. Data are already surfacing to corroborate what many people assume to be an inevitability: Katrina's young victims are experiencing trauma symptoms, behavioral problems, anxiety, and depression at approximately twice the rates of control samples not exposed to disaster (Callimachi, 2006).

Hurricanes and other community-wide disasters severely disrupt the functioning of families and may entirely break down the family's structure and access to social supports (Dudley-Grant, Mendez, & Zinn, 2000; Gerrity & Steinglass, 2003). With parents equally or even more affected by the catastrophe, teens' vulnerability to mental health and substance abuse problems is increased not only because of individual risk factors, but also as a result of parents' stress, and family instability and disorganization. Beyond the trauma symptoms that are generally associated with disasters, the construct of "ambiguous loss" is particularly germane in considering the experience of many Katrina victims. Ambiguous refers to loss without resolution or finality, such as not knowing a family member's whereabouts or if/when family or friends may return, or being uncertain how long one's job or housing situation will be secure, potentially complicating the recovery process for the entire family (Boss, 2006). Mental health, juvenile justice, and public school systems in affected areas of Louisiana are struggling to respond to the overwhelming needs of these children and families. Short-staffed and lacking resources due to budget cuts, these depleted systems cannot provide services for everyone in need.

### Importance of Families in Youths' Postdisaster Recovery

Without intervention, community-wide disasters have long-lasting, serious effects for many young people. For example, 21 months after Hurricane Andrew, 70% of school-aged children reported moderate–severe PTS symptoms (Shaw, Applegate, & Schorr, 1996). Three years following a major earthquake in Italy, untreated youth had actually *increased* PTSD symptom scores and depressive symptoms, with a striking 69% still experiencing PTSD (Goenjian et al., 1997). Most counseling for children following mass trauma has been delivered in school settings in group format (Stuber et al., 2002). There is some evidence that CBT interventions can reduce children's PTSD symptoms following severe stressors (La Greca, Silverman, Vernberg, & Roberts, 2002). For instance, a 4-week manualized intervention delivered to children following Hurricane Iniki in Hawaii was more effective than no treatment in reducing stress reactions at 1-year follow-up (Chemtob, Nakashima, & Carlson, 2002). CBT decreases PTSD and depressive symptoms up to 5 years postdisaster (Goenjian et al., 2005).

While most postdisaster intervention has been group or individually focused, converging several lines of evidence indicate that family involvement may be critical to successfully treating traumatized youth. First, parents' functioning, particularly parental psychopathology (Joshi & Lewin, 2004), may be a more important determinant of youths' stress reactions following disasters than the child's direct exposure to the disaster (Garrison et al., 1995). Treatment referrals for children in Manhattan following the 9/11 terrorist attacks was directly related to the level of psychopathology in their parents (Stuber et al., 2002). Yet because of their own stress, parents may not be able to determine their children's postdisaster needs (Franks, 2004). Particularly when family members are missing or dislocated, families need help to resolve the ambiguous losses they experience (Boss, 2004). Disasters such as Hurricane Katrina overwhelm the entire system, thus intervention with youth alone may not be sufficient to address the multiple factors maintaining youths' symptoms. Two randomized controlled trials with sexually abused children suffering from PTSD revealed greater effects on youths' symptoms using CBT treatments that included parents in comparison to child-centered approaches (Cohen, Deblinger, Mannarino, & Steer, 2004; Deblinger, Steer, & Lippman,

1999). In fact, Cohen et al. (2004) demonstrated effects of a parent-focused intervention on parents' own depression and stress, and improvements in their parenting practices and support for the child. Accordingly, practice parameters for treating traumatized youth prescribe parental involvement as a core feature of treatment, given that parents can be an important support for the child, help monitor symptoms and reinforce coping skills, and are the critical agents of change once therapy is completed (American Academy of Child and Adolescent Psychiatry, 1998).

Despite strong theoretical, clinical, and preliminary empirical justification for involving families in posttrauma work (e.g., Boss, 2006), few evidence-based guidelines exist for family-based treatment of traumatized individuals. Only one randomized trial of a family-based approach for trauma survivors has been published, a study of marital therapy for traumatized couples (Johnson and Williams-Keeler, 1998). In a recent comprehensive edited volume of "Effective Treatments for PTSD" (Foa, Keane, & Friedman, 2000), the *two-page* chapter on "Marital and Family Therapy" ends with the recommendation that "marital and family therapy be used as adjuncts of treatments that are focused on the alleviation of PTSD symptoms and not be seen as treatments for PTSD themselves" (Riggs, 2000, p. 355). Similarly, in their review of marital and family therapy approaches for PTSD, Harkness and Zador (2001, p. 335) conclude that "little empirical research has been done to validate clinical observations on the efficacy of couples and family treatments." Even reviews that center on treatment of childhood trauma specifically characterize parent or family interventions as "adjunct treatments" (Nader, 2001, pp. 291, 311). The complexity and large-scale impact of disasters such as Hurricane Katrina clearly require multiple-systems interventions that help the entire family.

## **An Integrative Model for Treating Young Disaster Victims With Substance Abuse Problems**

Research suggests that teens impacted by Hurricane Katrina may be at risk for a complex syndrome of substance abuse and comorbid problems. Research on adults following the Oklahoma City bombing demonstrated links between trauma and subsequent increases in alcohol use (Pfefferbaum & Doughty, 2001), particularly among those with previous psychiatric problems. Rates of DUIs increase in communities following disasters (Stewart, 1996) and substance abuse is linked to losing one's home (Koopman, Classen, & Spiegel, 1997). Data show that drinking and drug use increased in New Orleans and surrounding parishes after Hurricane Katrina (Hunter & Pope, 2006). Additionally, trauma exposure is implicated in the development of substance abuse problems. For instance, severely traumatized, homeless adolescents experience elevated rates of both PTSD and substance abuse (Thompson, 2005). Of teens in residential drug treatment, 70–75% have been exposed to trauma, and 20–30% meet diagnostic criteria for PTSD (Deykin & Buka, 1997). Further, PTSD rates increase as a function of drug use severity (Kilpatrick et al., 2000). Comorbid substance use disorder (SUD) and PTSD is associated with greater severity of both internalizing and externalizing symptoms than SUD alone (Giaconia et al., 2000). There is some support for the role of trauma in the initiation and exacerbation of substance abuse and delinquency among teens, particularly girls (Deykin & Buka, 1997).

Hurricane Katrina survivors may be at greater risk for substance abuse not only because of the exposure to the trauma itself, but also because of the multiple losses and particularly ambiguous losses they experienced in the months and now years after the storm and flooding. Traumatic loss may increase substance abuse risk through a "self-medication" mechanism in which individuals use substances to cope with grief and stress. Prior substance abuse may also increase anxiety and depression following traumatic events because it reduces the individual's ability to cope effectively (Deykin & Buka, 1997). In sum, youth experience and react to stress in a multilayered, interrelated ecological context including individual-, family-, school-, and

community-level influences (Sandler, 2001), implicating the need for systemic interventions. “Given the multiple factors related to prolonged disaster-related distress in children, effective intervention strategies must be broad and comprehensive. Individual treatment approaches in isolation are clearly insufficient for children in families evidencing parental distress, social support depletion, financial strains, and continued exposure to trauma” (Vernberg, 2002, p. 68). The following sections provide justification and details about a family-based drug abuse and trauma-focused intervention for young victims of Hurricane Katrina.

## **A FAMILY-BASED INTERVENTION FOR YOUNG DISASTER VICTIMS**

The previous sections described the unique circumstances of youth and families impacted by Hurricane Katrina, and highlighted the important role of families in postdisaster recovery. Previous research also consistently links specific aspects of family relationships to adolescent substance abuse (Rowe & Liddle, 2003). Strained parent–adolescent relationships and deficits in parenting practices (e.g., ineffective discipline) are among the most important factors in predicting drug abuse problems among youth (Liddle, Rowe, Dakof, & Lyke, 1998). Parenting strengths such as good monitoring, on the other hand, protect teens from negative influences. With the disintegration of the systems and supports that help families provide a strong base for teens, parenting stress, loss, and family disruption in the aftermath of Katrina may create conditions for increased substance abuse risk among adolescents. A comprehensive approach that addresses the youths’ substance abuse and trauma symptoms in the context of the family relationship and parenting factors maintaining the teens’ symptoms may be needed.

Although there are no published studies of treatments specifically for youth with comorbid PTSD and SUD, family-based treatments targeting the multiple realms of the teen’s functioning and social environment (e.g., Henggeler, Schoenwald, Borduin, Rowland, & Cunningham, 1998; Liddle, 2002) are recognized as among the most effective interventions for substance abuse and related problems (Williams & Chang, 2000). For instance, Multidimensional Family Therapy (MDFT; Liddle, 2002) has been developed and validated over the past 23 years in a series of randomized trials with diverse groups of substance-abusing adolescents. Importantly, MDFT has shown strong effects on coexisting internalizing problems (anxiety and depression) as well as drug abuse and delinquency (Liddle, Rowe, Dakof, Ungaro, & Henderson, 2004; Liddle et al., 2001). Given the hypothesized functional associations between substance abuse and trauma, treatment experts recommend a concurrent approach to address comorbid substance abuse and PTSD. MDFT offers this type of integrative, comprehensive multiple-systems intervention that targets change in the adolescent, parent, family, and external systems that support or hinder the youth’s recovery (Liddle, 1999). The treatment intervenes and coordinates with other systems, such as schools, court, and social services, to address community-level factors maintaining youths’ symptoms. Family-oriented interventions are among the most effective treatments for teen substance abuse problems generally (Rowe & Liddle, 2003), and MDFT stands out as having particularly strong empirical support (Brannigan, Schackman, Falco, & Millman, 2004; Rigter, Van Gageldonk, & Ketelaars, 2005).

### **Working With Clinical Providers Following Hurricane Katrina to Implement MDFT**

In the months following Katrina, MDFT trainers worked with clinical providers in St. Charles Parish, Louisiana, to address the overwhelming needs of their youth and families. St. Charles Parish encompasses 448 square miles along the industrial corridor which stretches along the Mississippi River between Baton Rouge and New Orleans (25 miles west of the city of New Orleans). St. Charles Parish residents were heavily impacted by Hurricane Katrina, given the storm’s direct effects on their parish as well as their proximity to New Orleans. Katrina battered the parish with 100-plus mph winds, 6–10 inches of rain, and an 8-foot storm surge that crested over the levees. Wind bands and flooding damaged homes, particularly in



impoverished communities on the East Bank. Like all of the New Orleans area, the parish had a mandatory evacuation order 2 days before Katrina. The parish was closed to residents until September 1 at which time they could enter the parish through checkpoints manned by armed National Guard. Electricity was not fully restored for weeks. Upon returning to the parish, the National Guard were stationed in parks and schools, and FEMA opened a Disaster Relief Center (DRC) for victims to access information about financial assistance, social services, and how to locate missing family members. The DRC also provided residents with water, ice, meals, and nonperishable food. Local businesses and stores were not open for weeks after the storm.

St. Charles Public Schools were closed for 3 weeks. When they reopened, approximately 1,000 displaced students from neighboring parishes registered in St. Charles Public Schools, resulting in a sudden 10% increase in total school enrollment. Students came from Orleans, Jefferson, Plaquemines, and St. Bernard Parishes and many intend to stay because of the exceptional ratings of their schools (ranked 2nd in the state before Katrina). Many youth experienced multiple school transitions in the months following the storm. Additionally, many households became overcrowded due to family and friends from neighboring parishes who needed shelter. Many who worked in St. Charles Parish and resided elsewhere lost their homes and relocated. Other St. Charles Parish residents who worked in New Orleans whose homes remained intact lost their jobs due to the closure of New Orleans businesses.

Providers in the area contacted MDFT trainers in search of an evidence-based family approach for their substance-abusing teens. An MDFT trainer immediately went to work with these providers, who were struggling to address the overwhelming needs of the teens and families in the parish. The MDFT trainer conducted a focus group with clinicians about their own experiences during and after the storm and their clients' complications in the wake of Hurricane Katrina. Therapists reported that their clients were struggling with new school situations, family stress, and loss of friends and neighbors who had suddenly moved away. Approximately half of their clients had relapsed during the evacuation process or when they returned to the parish following the storm. The MDFT trainer met with school and juvenile court personnel about their concerns for the youth of the parish, and visited their alternative school programs, which had been inundated with new referrals due to youth behavioral and drug problems in the aftermath of the disaster. The trainer also spoke with teens in the program, and gained a better understanding of the longer-term stressors that they and their families may face. Working collaboratively with providers and St. Charles Parish community leaders, and consulting with disaster and trauma experts, MDFT developers integrated new trauma-focused interventions and will empirically test the approach in this community over the next several years.

**Multidimensional Family Therapy**—Multidimensional Family Therapy is an outpatient family-based treatment for troubled youth (Liddle, 2002) considered in the USA and abroad as one of only a few empirically supported best practice treatments for teen substance abuse and related problems (Drug Strategies, 2003; NIDA, 2001; Rigter et al., 2005). The approach is grounded in developmental psychology and family systems theory and reflects the multidimensional nature of adolescent problems. MDFT assesses and intervenes at multiple levels and in multiple domains of the adolescent's life—individual, familial, and extrafamilial. Treatment generally consists of two sessions per week delivered over 4 months. Sessions are held in the home, clinic, and community. MDFT conforms to contemporary standards and guidelines for treatment of substance-abusing teens with comorbid mental health and behavioral problems: reliance on empirical literature in conceptualizing substance abuse (Liddle et al., 1998, 2000); linking interventions to key curative factors (Liddle, 1999); tailored and flexible treatment delivery system; and attending to provider issues (Liddle et al., 2002).

**MDFT interventions**—Multidimensional Family Therapy assesses and intervenes in four domains to address substance abuse and comorbid symptoms: (a) adolescent, (b) parent, (c)

family, and (d) external systems. The assessment and intervention domains correspond to considerable research findings that support the contributions in each of these areas to the development of drug and alcohol use as well as trauma and other problems. MDFT process studies have specified key aspects of the target problems (e.g., parenting deficits), and empirically outlined therapeutic options to reverse these development detouring attitudes and build on parenting strengths.

**MDFT trauma-focused interventions**—As we have done in our work with youth and families who experienced the devastation of Hurricane Andrew, the effects of Florida’s hurricanes in 2004, and Hurricanes Katrina and Wilma in 2006, MDFT therapists address trauma and loss among teens, parents, and families as a whole, aiming to improve coping and reduce the impact of stress on the family. Mass trauma complicates the already challenging process of treating teens in trouble, and Katrina’s effects may be more pronounced and long-lasting than previous disasters such as Hurricane Andrew. A multiple-systems, family- and community-based approach to trauma work with teens is recommended due to the widespread effects of disasters on the natural supports that maintain youth in times of stress and transition (Laor, Wolmer, Spirman, & Wiener, 2003), the fact that parental functioning and quality of the home environment are among the most important predictors of youths’ adjustment following disasters (Haizlip & Corder, 1996), and the finding that support from family is critical in facilitating positive coping and long-term recovery (Ursano, Fullerton, & Norwood, 2003). Thus, consistent with a multidimensional approach, MDFT trauma-focused interventions address the needs of the entire family, and MDFT therapists seek collaboration and advocacy within other systems.

**MDFT interventions with the adolescent**—Individual sessions with the teen help to establish a therapeutic alliance with the adolescent, building a critical intervention foundation (Liddle & Diamond, 1991). Through the use of specific protocols (Adolescent Engagement Interventions), therapists facilitate effective alliances with teenagers and can even reverse initially poor therapeutic alliances (Diamond, Liddle, Hogue, & Dakof, 1999). The protocol’s elements include presenting treatment as a collaborative process, defining therapeutic goals that are meaningful to the adolescent (Liddle & Diamond, 1991), generating hope by focusing on adolescent internal locus of control and by presenting oneself as an ally, and attending to the teen’s experience of his or her family, school, and neighborhood environment (Diamond & Liddle, 1999). Facilitation of life skill development, including substance abuse refusal skills, how to understand and cope with stress and adverse life events, and attending to relationship problems with parents and peers are all important aspects of the teen module. MDFT therapists are systematic in using certain cultural themes to enhance the teens’ openness and participation. The initial stage of treatment articulates the focal themes of the treatment. Family and peer relationships, school and the juvenile justice system, coping strategies, identity and self-expression, and the teen’s connection to a substance-using lifestyle are the core change targets (Liddle & Diamond, 1991).

**Trauma-focused interventions in individual sessions with teens**—These interventions focus on helping teens to develop better coping skills and more effective ways to seek out support by communicating their distress to parents and others. Individual sessions allow the teen to share his or her unique experiences and feelings and tell his or her own story, using “trauma narrative work” (Pynoos, Goenjian, & Steinberg, 1998). MDFT therapists encourage teens to share their unique perspective and concerns, and through this process examine their own emotional lives and connect with others in a new way. Themes are identified for further exploration within individual and family sessions, such as feelings of abandonment, loss, or guilt about having survived when others did not. Themes help to organize the therapy around particularly salient topics and core relational processes to be addressed and healed.

An important focus of this work is helping teens recognize the physical signs that trauma symptoms are being activated and to take concrete steps to regulate the emotions they experience (Ford, 2006). This approach increases the teens' sense of mastery and control over what seem to be overwhelming emotions. Many images, memories, smells, and sounds can trigger symptoms of anxiety and depression—seemingly out of the blue. MDFT therapists help the teens see that the feelings are elevated responses to stimuli in the environment, and that they make sense given that their internal systems have become hypervigilant to stressors and quick to react due to the trauma and multiple losses they have experienced. When they understand that practical steps can be taken to reduce the impact of the triggers, they can become empowered and feel less vulnerable and out of control. In individual sessions, therapists help teens to identify what those triggers are and to develop proactive strategies to focus, relax, and take care of themselves when the symptoms are coming on. A particularly critical aspect of this work is to help the teen link the trauma triggers and symptoms to urges to use, and to find concrete ways of stopping the cycle of relapse back to drinking and drugs. Together, the therapist and adolescent generate alternatives for coping that do not involve using substances.

Interventions also help teens to establish stability and positive supports, based on research that links stressful life events to continued trauma symptoms. "Children tend to rely on routine and structure in their world, and they find changes more difficult than do adults ... These secondary problems may be more troublesome than the symptoms directly resulting from the trauma" (Lubit & Eth, 2003, p. 64). Thus MDFT therapists are cognizant of the interrelated nature of youth problems, and help teens understand the links between the stress of the disaster and their anxiety, grief, and substance use. One of the most important steps teens can take when feeling the symptoms of anxiety and depression is to turn to a family member for a sense of security and support. Individual sessions in MDFT prepare the youth to reach out to parents and other family members and talk to them in new ways, so that they can communicate clearly what they need in order to feel safe and protected. In sum, a significant amount of time is spent in individual sessions with the adolescent to address comorbid SUD and PTSD symptoms. These interventions help teens (a) express their unique perspective and tell their own story so that important themes can be identified and explored; (b) identify triggers that lead to feelings of being out of control and wanting to use; (c) practice concrete steps that provide alternatives to using and improve their coping abilities; (d) communicate effectively with parents and others about their needs; (e) effectively solve interpersonal problems, control anger, and increase social competence; and (f) develop prosocial alternatives to a substance-using lifestyle.

**MDFT interventions with the parent**—Multidimensional Family Therapy uses individual sessions with parents to reach the parent as both an adult with her or his own needs and issues, and as a parent who may have lost faith in his or her ability to influence the adolescent (Schmidt, Liddle, & Dakof, 1996). Parental Reconnection Interventions (e.g., enhancing feelings of love and commitment, validating parents' past efforts, generating hope) are designed to close the emotional distance between the parent(s) and their adolescent and to create a foundation for behavioral changes in parenting. These strategies position the parent to be motivated and willing to try a new kind of relationship with his or her adolescent and adopt more effective parenting strategies. Parenting skill development (e.g., monitoring) is a robust predictor of substance abuse, and thus a fundamental target in MDFT. Therapists identify and build on parenting competencies. At the same time, MDFT therapists focus on the parents in their role outside the parenting realm (Liddle et al., 1998), acknowledging their stress and burden and their hopes and dreams for their own lives.

**Trauma-focused interventions with parents**—Consistent with MDFT principles, trauma-focused interventions with parents address the parents' own functioning as individuals, as well as their role as parents. First and foremost, these interventions address the serious stressors and life disruptions that parents face postdisaster (e.g., damage to the home, loss of



job, relocation) with the aim of helping parents cope effectively and resume an effective parenting role. “Typically, parents or teachers serve as the primary sources of support for children and help when children are having problems. When the adults in children’s lives are distracted or affected by disaster, however, they may overlook children’s needs or may not be able to help children cope with disasters and the aftermath” (Silverman & LaGreca, 2002). Parents may feel added stress and guilt because they realize that they are not able to attend fully to their teen’s needs (Hagan and the Committee on Psychosocial Aspects of Child and Family Health and the Task Force on Terrorism, 2005); thus validation and reinforcement of their parenting efforts is critical. In a parallel way to the emotion regulation work done with teens, therapists help parents recognize their own stress and emotional reactions to triggers and use concrete tools to manage these sometimes overwhelming responses. In line with contemporary trauma interventions, several techniques are employed to help parents cope with the cognitive, emotional, and physiological symptoms of trauma, including imagery and other relaxation strategies (Naparstek, 2004).

A major focus is working with parents around issues of self-care and very practical ways that they can take better care of themselves. This time one-on-one with parents is important in their own process of engaging in the therapy and understanding that there is something in it for them. MDFT therapists are careful not to ask parents to make changes in their parenting before they are ready to do so; they first must have the experience of being heard, respected, and supported by the therapist and start taking clear steps to take care of themselves. When parents have experienced severe trauma and loss, the therapist encourages parents to obtain services to address their own needs. In one case, a father who had experienced extreme PTSD related to combat in Vietnam had successfully managed his symptoms through his own therapy, but tended to withdraw when his son exhibited similar trauma symptoms post-Katrina because reliving the trauma through his son’s symptoms was difficult for him. In MDFT, the therapist validated the father for his strengths and identified the tools he used on a daily basis to cope with his own trauma triggers and urges to use. The therapist helped the father apply these same tools when his son was exhibiting symptoms and expressing urges to use, so that he could share these positive and productive coping skills with his son. The father withdrew less and became more active in his son’s recovery, and the son responded well because he knew his father shared his own struggles. They joined together in their recovery from drugs and their trauma symptoms, understanding each other’s experiences and appreciating each other’s attempts to change.

The second aspect of our work with parents involves helping parents look at their own parenting and become more available and responsive to their teens’ experiences. Research suggests that parents may need help in three critical areas: (a) listening to and validating their children’s experience of the disaster and subsequent events; (b) understanding and tolerating their children’s emotional reactions; and (c) managing their own emotional responses (Cook et al., 2005). Educating parents that stress reactions among teens may vary widely and explaining the different types of symptoms to be tuned into is an important aspect of this work. Normalizing the process of recovery and the fact that progress can be slow is critical. A noted trauma expert explains that trauma recovery “requires that others show some tolerance for the survivor’s fluctuating need for closeness and distance, and some respect for her attempts to reestablish autonomy and self-control” (Herman, 1997, p. 63). MDFT therapists prepare parents to listen to the teen and encourage open discussion about their feelings and experiences, without undue pressure. At the same time, parents are encouraged in their attempts to help the teen recognize triggers and develop more effective coping strategies other than using, as in the case above. Thus core parenting work helps parents deal with their own loss and trauma, and to be able to help their teen heal through effective parenting and a nurturing relationship.

**MDFT interventions to change family interactions**—The teen’s family environment is a core target in MDFT. Individual sessions with teens and parents help them prepare for the more direct attempts to change the parent–adolescent relationship in family sessions. Changing stable transactions between family members are challenging but key, given the kind of comprehensive changes sought. In order for discussions between parent and adolescent to be useful, parents and adolescents must be able to communicate without excessive blame, defensiveness, or recrimination (Diamond & Liddle, 1999). The clinician creates the context for such discussion by relying on the already established relationships with each family member and by exerting a focused, active influence process. Other family members can also provide positive leverage for change; thus siblings, grandparents, aunts, uncles, cousins, and other extended family members are included in interventions. Cooperation is achieved by emphasizing the serious circumstances of the youth’s life (e.g., court involvement and school failure) and establishing a connection between their involvement in treatment and new alternatives for the adolescent.

**Trauma-focused interventions with families**—Multidimensional Family Therapy therapists seek to rebuild the critical social supports within the family that are necessary for long-term recovery (Joshi & Lewin, 2004) and to empower family members to construct solutions together to the seemingly insurmountable barriers they face. Research shows that family functioning is compromised following disasters, and that the adversity and disruption of familiar roles can continue for months or years even among previously well-functioning families (Vernberg, 2002). During the “recovery-and-reconstruction” phase, media attention is withdrawn, relief efforts diminish substantially, and families may become disillusioned during this period, which can last for years (Flynn & Norwood, 2004; Ursano et al., 2003). Families respond differently to crises, and vary in their ability to cope. When family members remain missing for extended periods of time, the ambiguous losses faced by the entire family can complicate recovery and keep them from moving on (Boss, 2006). Some family members may withdraw and become pessimistic about the future. Displaced emotions, avoidance of contact with others, and increased family conflict are likely to result from poor family coping (Gerrity & Steinglass, 2003).

Family sessions in MDFT provide opportunities for family members to talk together about their feelings of trauma, loss, and stress and to address conflict and other barriers that keep families from moving beyond the tragedy. Recovery of a sense of safety and sense of one’s self occurs in connection with others (Herman, 1997). Blame and criticism keep parents disconnected from their adolescent and unable to reach out to provide the acceptance, support, hope, and love that are so badly needed during times of stress and change. For example, in one MDFT case, a young teenage girl was unable to let go of extreme anger toward her mother, who had unknowingly placed the girl in great danger by allowing a family member to “take care of her” for several days. In this family member’s care, the girl experienced severe abuse and felt completely abandoned by her mother, who did not think to check on her whereabouts or her well-being. This anger kept the girl from being able to go to her mother for support and help in the healing process, and perpetuated her feeling of being disconnected and abandoned by her. In family therapy, the therapist gradually helped the young teenager become ready to express these feelings to her mother. Through “successive approximations,” over a series of sessions, the daughter was able to share more of her thoughts and feelings during and following the traumatic 3 days she had been abused, and what she needed from her mother now to feel safe and cared for. The therapist skillfully helped the mother to listen without defensiveness and to respond from a loving and caring place. The therapist shaped new conversations in which the mother communicated her deep regret for what happened, her own pain watching her daughter suffer from the effects of the trauma and knowing she had not protected her, and her solid commitment to help her daughter recover. This series of discussions between family members helped the mother and daughter heal from what was once an unspeakable tragedy.

The family therapy technique of enactment enables the therapist to actively shape and rework relational patterns that are stuck in negativity and pessimism. As in the case described above, through a process of “shuttle diplomacy,” the therapist carefully maneuvers among family members to help conflict, pain, and loss be openly and honestly expressed and resolved (Diamond & Liddle, 1999). The therapist asks each family member to express his or her underlying feelings such as regret, disappointment, hurt, or loss in a way that is not recriminating. While one family member shares his or her experiences and feelings, the other family members are asked to listen attentively, validate the views of the other person, and respond without defensiveness or attack. The therapist comes in to the conversation as needed, to provide redirection toward positive aspects of the relationship and focus on love and commitment to change what has been damaged in the family. A “successive approximations” strategy is used to emphasize that agreement is not going to be perfect and healing can be slow, but that the family’s willingness to continue to reach out to each other and eventually let go of past hurts can create change. For instance, an adolescent boy who was traumatized by his older brother’s death in Iraq perceived that his father had lost his favorite son and was now left with him, the “bad seed,” who was always in trouble and only a burden to him. His anger toward his father was complicated by his own grief that his brother was gone, and his feelings of guilt that he was alive and constantly messing up, while his brother, who had always been successful and popular, had died fighting valiantly in the war. It took several months of treatment and work in individual sessions to detangle this complex set of emotions before the teen was able to understand why he felt depressed and angry at the same time. The therapist helped the adolescent link these hurt and angry feelings to impulses to use. Parallel sessions with the father addressed his own grief and depression having lost his firstborn and beloved older boy. Eventually, the son was able to express his feelings to his father. The father was able to respond to his son’s concerns, express his still profound grief about his older son’s death, and communicate his deep love for both sons.

**MDFT interventions with systems external to the family**—Multidimensional Family Therapy attempts to maximize its potential influence by intervening in as many aspects of the youth’s life as possible (Henggeler et al., 1998). Case management addresses the realities of life that impact the child and family every day with systems outside the family. The therapist assesses these important case management needs, which are frequently barriers to program participation, and integrates these services with treatment. Collaboration among the teen’s multiple systems is critical (e.g., school, juvenile justice), and the therapist plays a central role in orchestrating these services. These target areas support movement away from substance use and correlated problems and provide concrete behavioral and lifestyle alternatives.

**Trauma-focused interventions with other systems**—Multidimensional Family Therapy therapists also seek to bolster stability and support in an otherwise chaotic postdisaster environment. Particularly among poor families with few resources, the effects of community-wide disasters can be debilitating; “poor families are less likely to have adequate personal property insurance; are more likely to work in service jobs, which are often disrupted following widespread disasters; and generally have few options for housing and health care” (Vernberg, 2002, p. 68). Yet when they are effectively mobilized, social networks provide important support and service provision that can protect youth and families from the deleterious effects of disasters (Steury, Spencer, & Parkinson, 2004).

Multidimensional Family Therapy clinicians help families generate options by negotiating more effectively with social service agencies; they serve a critical linking function that enables youth and families to develop new, stable supports following life disruptions. Helping teens adjust to new school situations and develop prosocial activities that may help them connect to positive peers can be a critical part of postdisaster recovery, particularly given the many losses they have experienced. Trauma experts advise that “attention needs to be paid to the stress and

resource levels in stricken communities long after the disaster has passed—for it is these residual stressors and resource losses, rather than the initial trauma, that may explain variations in the longevity of postdisaster distress” (Norris, Perilla, Raid, Kaniasty, & Lavizzo, 1999).

Parents and teens may have need for additional treatment focused on the alleviation of trauma symptoms. Where appropriate and necessary, MDFT therapists help connect parents and teens to additional services that can facilitate recovery, including support groups specifically targeting trauma survivors. In one case, a teenage girl was extremely triggered by her mother’s involvement with abusive men, even though the men had not been abusive toward her directly. The girl was making excellent progress in therapy until her mother renewed a previously abusive relationship and continued a pattern of crisis and violence with the boyfriend. The MDFT therapist immediately summoned resources in the community to support and stabilize the mother, and she embarked on an intensive process of her own recovery with the help of victims’ services. This intensity of one-on-one therapy and group support could not have been achieved within the family and individual sessions in MDFT; thus accessing community resources was pivotal to both the mother’s and daughter’s success in treatment. In the post-Katrina period, resources tend to be scarce, so extrafamilial links are even more important to families.

## DISCUSSION: TESTING AN INTEGRATIVE FAMILY-BASED MODEL

The integrative family-based model described above is being empirically tested in the St. Charles Parish community with youth clinically referred for substance abuse and related problems. The study is a randomized clinical trial in which MDFT is being compared against a high-quality group drug abuse treatment with traditional CBT trauma interventions. A range of outcomes are being examined with each teen and family over the year following treatment, including substance abuse and behavioral problems among the adolescents, trauma symptoms and other emotional problems among both teens and parents, and parenting and family strengths and risk factors. Although a main focus of the research is determining the comparative effects of MDFT versus group treatment for young disaster victims, the study will also examine other key questions, such as how the intervention works and for whom.

The study screens and recruits all clinically referred teens from St. Charles Parish who were living in FEMA disaster areas at the time of the storm and meet basic eligibility criteria. They must be between 13 and 17 years of age, have a family member willing to participate in research assessments and treatment (if randomized to MDFT), have a substance abuse problem requiring clinical intervention, and report mild to moderate trauma symptoms. Eligible youth whose families consent to participate in the study are randomized to either MDFT or the group-based treatment. The two treatment conditions are delivered by two sets of therapists from the same clinical agency (although housed at different sites to minimize contagion of the interventions), in order to maximize generalizability to real-world treatment settings. Both treatments last approximately 4 months and have equivalent dosage (approximately two sessions per week). Treatment fidelity measures used in several previous randomized clinical trials of MDFT (see Hogue et al., 1998) will be employed to ensure that the treatments are delivered as specified and are sufficiently distinct. Teens and parents each complete a comprehensive battery of well-validated measures to assess a range of processes and outcomes at intake to treatment and at 2, 4, 6, and 12 months following intake. In addition to main questions about the relative effectiveness of the integrative MDFT model in comparison to group treatment over the year following intake, additional research questions will be explored.

Developing effective interventions for adolescents following disasters requires a thorough understanding of the mediators of youths’ outcomes, or the factors that account for the treatments’ effects. Previous research suggests that youths’ reactions to community-wide

disasters such as Hurricane Katrina are explained by a multidimensional stress-and-coping model that includes characteristics of the stressor (e.g., exposure), the child (e.g., pretrauma functioning), the postdisaster environment (e.g., family functioning), and the child's ability to cope (La Greca, Silverman, Vernberg, & Prinstein, 1996). Compromised coping appears to mediate the impact of stress on a range of negative outcomes (e.g., Capaldi & Patterson, 1991), including increased substance use over adolescence (Hoffman, Cerbone, & Su, 2000). Although children's coping has been validated as an important process across a range of developmental outcomes, there is no existing research on the extent to which family-based treatment approaches improve youths' coping skills. Thus an important aim of the current study will be to examine whether MDFT more significantly improves teens' coping skills, and whether changes in teens' coping are linked to reduced drug use and trauma symptoms. This study is the first to examine youths' coping as a mediator of substance abuse and trauma outcomes in family-based treatment.

A related question is whether improvements in parents' coping (hypothesized to improve more in MDFT) are linked to increased use of positive coping skills among teens. Parents may be the most important single influence in helping youth cope better and reduce their emotional symptoms and substance use. Research shows that parents are the most important source of support for children in the posttrauma period (La Greca et al., 1996). Parents' own PTSD reactions are an important predictor of the severity of PTSD among children following disasters. Family disruption following traumatic events may be more predictive of children's adjustment than their experiences during the event itself (McFarlane, 1987). Research also demonstrates that families buffer youth from the effects of life stress. For instance, the impact of life stress on externalizing problems is buffered by low levels of family conflict (Holmes, Yu, & Frentz, 1999). Thus family-based interventions work with families to reduce risk factors for poor outcomes, such as parenting stress and family conflict, and promote protective processes, such as parental monitoring and positive parent-child relationships, that improve teens' coping. Targeting these core processes in treatment may help adolescents recover from trauma and substance abuse following extreme life stress. The current study will examine the extent to which improved parent coping predicts healthier coping and less drug use among teens.

In addition to examining the effects of family-based treatment and its potential mediators, examining moderators of outcome is essential to understanding the "boundary conditions" of the treatment with specific populations (Kazdin, 1994). Level of hurricane-related stress and life disruption/loss may moderate the effects of treatment. For instance, stressful life events in the 6 months following Hurricane Andrew were more predictive of teens' PTSD than exposure to the disaster itself (Garrison et al., 1995). Thus for adolescents with greater life stress, loss, and trauma symptoms in the aftermath of Katrina, comprehensive, family-based treatment may be critical for reducing substance abuse and emotional distress.

The study explores unresolved questions in the disaster research specialty, in family-based interventions, and in the examination of the drug abuse/trauma nexus. Potential for new knowledge is high, yet the challenges are considerable. Postdisaster situations pose obstacles in almost every aspect of research, from staffing to recruitment to follow-up of participants. Some of the most obvious and daunting challenges lie in the timing of the research, given that the power to test postdisaster interventions fades over time yet there are few shortcuts to setting up the research (e.g., obtaining funding, IRB approval, conducting trainings, finalizing assessment instruments, setting up the database procedures). However, the current intervention was not designed to be delivered directly after the disaster, but rather to target and address the problems that unfold over the long term following trauma. Other challenges had to do with the high rate of displacement in New Orleans and its environs and lack of resources, compounding



normal start-up difficulties (e.g., space for the project was scarce, funding was cut, services to set up phones and internet access were agonizingly slow).

In other ways, the context has been ideal for the development and testing of the integrative family-based approach. The community is tremendously receptive to and appreciative of help. Community leaders have worked closely with the clinical and research teams to assist in the process so that the youth and families can receive the help they need. Tremendous work lies ahead to repair the damage left in Katrina's wake. It will continue to require a massive effort on all fronts. Entire communities are rebuilding together, and families are reclaiming their lives and their homes. As for the children of Katrina, all will not be lost.

#### Acknowledgements

This research was supported by a grant from the National Institute on Drug Abuse (Grant No. R01 DA021887, C. Rowe, PI). We gratefully acknowledge Dr. Gayle Dakof, Dr. Annette LaGreca, and Dr. Julian Ford, as well as the entire Center for Family and Youth Services team, for their significant contributions to this project.

#### References

- American Academy of Child and Adolescent Psychiatry. Practice parameters for the assessment and treatment of children and adolescents with posttraumatic stress disorder. *Journal of the American Academy of Child and Adolescent Psychiatry* 1998;37:4S–26S. [PubMed: 9785726]
- Boss P. Ambiguous loss research, theory, and practice: Reflections after 9/11. *Journal of Marriage and Family* 2004;66:551–566.
- Boss, P. Loss, trauma, and resilience: Therapeutic work with ambiguous loss. New York: W.W. Norton; 2006.
- Boss P, Beaulieu L, Wileing E, Turner W, LaCruz S. Healing loss, ambiguity, and trauma: A community-based intervention with families of union workers missing after the 9/11 attack in New York City. *Journal of Marital and Family Therapy* 2003;29:455–467. [PubMed: 14593688]
- Brannigan R, Schackman BR, Falco M, Millman RB. The quality of highly regarded adolescent substance abuse treatment programs: Results of an in-depth national survey. *Archives of Pediatrics & Adolescent Medicine* 2004;158:904–909. [PubMed: 15351757]
- Callimachi, R. Amid the ruins of U.S. hurricane, Katrina's children struggle. 2006. Retrieved June 16, 2006, from <http://www.signonsandiego.com/news/nation/katrina/20060423-0915-katrinascchildren.html>
- Capaldi DM, Patterson GR. Relation of parental transitions to boys' adjustment problems: I. A linear hypothesis. II. Mothers at risk for transitions and unskilled parenting. *Developmental Psychology* 1991;27:489–504.
- Chemtob CM, Nakashima J, Carlson JG. Brief treatment for elementary school children with disaster-related PTSD: A field study. *Journal of Clinical Psychology* 2002;58:99–112. [PubMed: 11748599]
- Cohen JA, Deblinger E, Mannarino AP, Steer RA. A multisite, randomized controlled trial for children with sexual abuse-related PTSD symptoms. *Journal of the American Academy of Child and Adolescent Psychiatry* 2004;43:393–402. [PubMed: 15187799]
- Cook A, Spinazzola J, Ford J, Lanktree C, Blaustein M, Cloitre M, et al. Complex trauma in children and adolescents. *Psychiatry Annals* 2005;35:390–398.
- Deblinger E, Steer RA, Lippman J. Two-year follow-up study of cognitive behavioral therapy for sexually abused children suffering post-traumatic stress symptoms. *Child Abuse & Neglect* 1999;23:1371–1378. [PubMed: 10626618]
- Dennis ML, Stevens SJ. Maltreatment issues and outcomes of adolescents enrolled in substance abuse treatment. *Child Maltreatment* 2003;8:3–6. [PubMed: 12568500]
- Deykin EY, Buka SL. Prevalence and risk factors for posttraumatic stress disorder among chemically dependent adolescents. *The American Journal of Psychiatry* 1997;154:752–757. [PubMed: 9167501]
- Diamond GS, Liddle HA. Transforming negative parent-adolescent interactions: From impasse to dialogue. *Family Process* 1999;38:5–26. [PubMed: 10207708]

- Diamond GM, Liddle HA, Hogue A, Dakof GA. Alliance-building interventions with adolescents in family therapy: A process study. *Psychotherapy: Theory, Research, Practice, and Training* 1999;36:355–368.
- Drug Strategies. Treating teens: A guide to adolescent drug programs. Washington, DC: Author; 2003.
- Dudley-Grant R, Mendez GI, Zinn J. Strategies for anticipating and preventing psychological trauma of hurricanes through community education. *Professional Psychology: Research and Practice* 2000;31:387–392.
- Flynn BW, Norwood AE. Defining normal psychological reactions to disaster. *Psychiatric Annals* 2004;34:597–603.
- Foa, EB.; Keane, TM.; Friedman, MJ., editors. *Effective treatments for PTSD: Practice guidelines from the International Society for Traumatic Stress Studies*. New York: Guilford Press; 2000.
- Ford, JD. *TARGET: Trauma affect regulation: Guide for education and therapy*. University of Connecticut Health Center; 2006.
- Franks BA. A world of trouble (and how children develop in it). *Journal of Applied Developmental Psychology* 2004;25:491–500.
- Garrison CZ, Bryant ES, Addy CL, Spurrier PG, Freedy JR, Kilpatrick DG. Posttraumatic stress disorder in adolescent after Hurricane Andrew. *Journal of the American Academy of Child and Adolescent Psychiatry* 1995;34:1193–1201. [PubMed: 7559314]
- Gerrity, ET.; Steinglass, P. Relocation stress following catastrophic events. In: Ursano, RJ., editor. *Terrorism and disaster: Individual and community mental health interventions*. New York: Cambridge University Press; 2003. p. 259-286.
- Giaconia RM, Reinherz HZ, Hauf AC, Paradis AD, Wasserman MS, Langhammer DM. Comorbidity of substance use and post-traumatic stress disorders in a community sample of adolescents. *American Journal of Orthopsychiatry* 2000;70:253–262. [PubMed: 10826037]
- Gleser, GC.; Green, BL.; Winger, C. *Prolonged psychosocial effects of disaster: A study of Buffalo Creek*. New York: Academic Press; 1981.
- Goenjian AK, Karayan I, Pynoos RS, Minassian D, Najarian LM, Steinberg AM, et al. Outcome of psychotherapy among early adolescents after trauma. *American Journal of Psychiatry* 1997;154:536–542. [PubMed: 9090342]
- Goenjian AK, Walling D, Steinberg AM, Karayan I, Najarian LM, Pynoos R. A prospective study of posttraumatic stress and depressive reactions among treated and untreated adolescents 5 years after a catastrophic disaster. *American Journal of Psychiatry* 2005;162:2302–2308. [PubMed: 16330594]
- Hagan JF. the Committee on Psychosocial Aspects of Child and Family Health and the Task Force on Terrorism. Psychosocial implications of disaster and terrorism on children: A guide for the pediatrician. *Pediatrics* 2005;116:787–795. [PubMed: 16140724]
- Haizlip, TM.; Corder, BF. Coping with natural disaster. In: Pfeffer, CR., editor. *Severe stress and mental disturbance in children*. Washington, DC: American Psychiatric Association; 1996. p. 131-152.
- Harkness, L.; Zador, N. Treatment of PTSD in families and couples. In: Wilson, JP.; Friedman, MJ.; Lindy, JD., editors. *Treating psychological trauma and PTSD*. New York: Guilford Press; 2001.
- Henggeler, SW.; Schoenwald, SK.; Borduin, CH.; Rowland, MD.; Cunningham, PB. *Multisystemic treatment of antisocial behavior in children and adolescents*. New York: Guilford Press; 1998.
- Herman, J. *Trauma and recovery: The aftermath of violence—from domestic abuse to political terror*. New York: Basic Books; 1997.
- Hoffman JP, Cerbone GF, Su S. A growth curve analysis of stress and adolescent drug use. *Substance Use & Misuse* 2000;35:687–716. [PubMed: 10807152]
- Hogue AT, Liddle HA, Rowe CL, Turner RM, Dakof GA, LaPann K. Treatment adherence and differentiation in individual versus family therapy. *Journal of Counseling Psychology* 1998;45:104–114.
- Holmes CS, Yu Z, Frenzt J. Chronic and discrete stress as predictors of children's adjustment. *Journal of Consulting and Clinical Psychology* 1999;67:411–419. [PubMed: 10369062]
- Hunter M, Pope J. Stressed? No, we're ok, really, we are: Actually, we're on the edge, mental health experts say. *The Times-Picayune*. 2006

- Johnson SM, Williams-Keeler L. Creating healing relationships for couples dealing with trauma: The use of emotionally focused marital therapy. *Journal of Marital and Family Therapy* 1998;24:25–40. [PubMed: 9474522]
- Joshi PT, Lewin SM. Disaster terrorism: Addressing the effects of traumatic events on children and their families is critical to long-term recovery and resilience. *Psychiatric Annals* 2004;34:710–716.
- Kantrowitz, B.; Breslau, K. Some are found, all are lost. 2005. Retrieved September 30, 2005, from <http://www.msnbc.msn.com/id/9287034/>
- Kazdin, AE. Methodology, design, and evaluation in psychotherapy research. In: Bergin, AE.; Garfield, LS., editors. *Handbook of psychotherapy and behavior change*. New York: John Wiley and Sons; 1994. p. 19-71.
- Kilpatrick DG, Acierno R, Resnick HS, Best CL, Schnurr PP. Risk factors for adolescent substance abuse and dependence: Data from a national sample. *Journal of Consulting and Clinical Psychology* 2000;68:19–20. [PubMed: 10710837]
- Koopman, C.; Classen, C.; Spiegel, D. Multiple stressors following a disaster and dissociative symptoms. In: Fullerton, CS.; Ursano, RJ., editors. *Posttraumatic stress disorder: Acute and long-term responses to trauma and disaster*. Washington, DC: American Psychiatric Press; 1997. p. 21-35.
- LaGreca, AM.; Silverman, WK. Children and disasters and terrorism. In: Kendall, P., editor. *Children and adolescent therapy: Cognitive-behavioral procedures*. 3. New York: Guilford Press; in press
- La Greca AM, Silverman WS, Vernberg EM, Prinstein MJ. Posttraumatic stress symptoms in children after Hurricane Andrew: A prospective study. *Journal of Consulting and Clinical Psychology* 1996;64:712–723. [PubMed: 8803361]
- La Greca, AM.; Silverman, WS.; Vernberg, EM.; Roberts, MC., editors. *Helping children cope with disasters and terrorism*. Washington, DC: APA; 2002.
- Landau, J.; Saul, J. Facilitating family and community resilience in response to major disaster. In: Walsh, F.; McGoldrick, M., editors. *Living beyond loss: Death in the family*. 2. New York: W.W. Norton; 2004. p. 285-309.
- Laor N, Wolmer L, Spirman S, Wiener Z. Facing war, terrorism, and disaster: Toward a child-oriented comprehensive emergency care system. *Child and Adolescent Psychiatric Clinics of North America* 2003;12:343–361. [PubMed: 12725015]
- Liddle HA. Theory development in a family-based therapy for adolescent drug abuse. *Journal of Clinical Child Psychology* 1999;28:521–532. [PubMed: 10587903]
- Liddle, HA. *Multidimensional Family Therapy Treatment (MDFT) for adolescent cannabis users*. Volume 5 of the Cannabis Youth Treatment (CYT) manual series. Rockville, MD: Center for Substance Abuse Treatment, Substance Abuse and Mental Health Services; 2002.
- Liddle HA, Dakof GA, Parker K, Diamond GS, Barrett K, Tejada M. Multidimensional family therapy for adolescent drug abuse: Results of a randomized clinical trial. *American Journal of Drug and Alcohol Abuse* 2001;27:651–688. [PubMed: 11727882]
- Liddle HA, Diamond G. Adolescent substance abusers in family therapy: The critical initial phase of treatment. *Family Dynamics of Addictions Quarterly* 1991;1:55–68.
- Liddle HA, Rowe C, Dakof G, Lyke J. Translating parenting research into clinical interventions for families of adolescents (Special issue). *Clinical Child Psychology and Psychiatry* 1998;3:419–443.
- Liddle HA, Rowe CL, Dakof GA, Ungaro R, Henderson CE. Early intervention for adolescent substance abuse: Pretreatment to posttreatment outcomes of a randomized clinical trial comparing Multidimensional Family Therapy and peer group treatment. *Journal of Psychoactive Drugs* 2004;36:49–63. [PubMed: 15152709]
- Liddle HA, Rowe C, Diamond GM, Sessa FM, Schmidt S, Ettinger D. Towards a developmental family therapy: The clinical utility of research on adolescence. *Journal of Marital and Family Therapy* 2000;26:485–499. [PubMed: 11042841]
- Liddle HA, Rowe CL, Quille TJ, Dakof GA, Mills DS, Sakran E, et al. Transporting a research-based adolescent drug treatment into practice. *Journal of Substance Abuse Treatment* 2002;22:1–13. [PubMed: 11849902]
- Lubitz, R.; Eth, S. Children, disasters, and the September 11th World Trade Center attack. In: Ursano, RJ.; Norwood, AE., editors. *Trauma and disaster responses and management*. 1. Washington, DC: American Psychiatric Publishing; 2003. p. 63-95.

- McFarlane AC. Post-traumatic phenomena in a longitudinal study of children following a natural disaster. *Journal of the American Academy of Child and Adolescent Psychiatry* 1987;26:764–769. [PubMed: 3667509]
- Nader, K. Treatment methods for childhood trauma. In: Wilson, JP.; Friedman, MJ.; Lindy, JD., editors. *Treating psychological trauma and PTSD*. New York: Guilford Press; 2001. p. 278-334.
- Naparstek, B. *Invisible heroes: Survivors of trauma and how they heal*. New York: Bantam Books; 2004.
- National Institute on Drug Abuse. *Effective drug abuse treatment approach*. 2001. Retrieved December 10, 2004, from <http://www.nida.nih.gov/BTDP/Effective/Liddle.html>
- Norris FH, Perilla JL, Raid JK, Kaniasty K, Lavizzo EA. Stability and change in stress, resources, and psychological distress following natural disaster: Findings from Hurricane Andrew. *Anxiety, Stress, and Coping* 1999;12:363–396.
- Olsson CA, Coffey C, Toumbourou JW, Bond L, Thomas L, Patton G. Family risk factors for cannabis use: A population-based survey of Australian secondary school students. *Drug and Alcohol Review* 2003;22:143–152. [PubMed: 12850900]
- Pfefferbaum B, Doughty DE. Increased alcohol use in a treatment sample of Oklahoma City bombing victims. *Psychiatry* 2001;64:296–303. [PubMed: 11822207]
- Pynoos RS, Goenjian AK, Steinberg AM. A public mental health approach to the postdisaster treatment of children and adolescents. *Child and Adolescent Psychiatric Clinics of North America* 1998;7:195–210. [PubMed: 9894088]
- Reichgott, M. As many as 500,000 Hurricane Katrina evacuees may need mental health counseling, officials say. 2006. Retrieved June 19, 2006, from <http://www.highbeam.com/library/doc0.asp?DOCID=1P1:120019609#=2&ctrlInfo=Round20%3AMode20b%3ASR%3AR>
- Riggs, DS. Marital and family therapy. In: Foa, EB.; Keane, TM.; Friedman, MJ., editors. *Effective treatments for PTSD: Practice guidelines from the International Society for Traumatic Stress Studies*. New York: Guilford Press; 2000. p. 354-355.
- Rigter, H.; Van Gageldonk, A.; Ketelaars, T. *Treatment and other interventions targeting drug use and addiction: State of the art 2004*. Utrecht: National Drug Monitor (of the Netherlands); 2005.
- Rowe CL, Liddle HA. Substance abuse. *Journal of Marital and Family Therapy* 2003;29:97–120. [PubMed: 12616802]
- Sandler I. Quality and ecology of adversity as common mechanisms of risk and resilience. *American Journal of Community Psychology* 2001;29:19–61. [PubMed: 11439827]
- Sargent J. Introduction. Systemic responses to disaster: Stories of the aftermath of Hurricane Katrina. *AFTA Monograph Series*, Winter 2007;2007:2–4.
- Schmidt SE, Liddle HA, Dakof GA. Changes in parenting practices and adolescent drug abuse during multidimensional family therapy. *Journal of Family Psychology* 1996;10:12–27.
- Shaw JA, Applegate B, Schorr C. Twenty-one-month follow-up study of school-age children exposed to Hurricane Andrew. *Journal of the American Academy of Child and Adolescent Psychiatry* 1996;35:359–364. [PubMed: 8714325]
- Silverman, WK.; LaGreca, AM. Children experiencing disasters: Definitions, reactions, and predictors of outcomes. In: LaGreca, AM.; Silverman, WK.; Vernberg, EM.; Roberts, MC., editors. *Helping children cope with disasters and terrorism*. Washington, DC: American Psychological Association; 2002. p. 11-33.
- Steury S, Spencer S, Parkinson GW. Commentary on “A national longitudinal study of the psychological consequences of the September 11, 2001 terrorist attacks: Reactions, impairment, and help-seeking. *Psychiatry* 2004;67:158–163. [PubMed: 15262582]
- Stewart SH. Alcohol abuse in individuals exposed to trauma: A critical review. *Psychological Bulletin* 1996;120:83–112. [PubMed: 8711018]
- Stuber J, Fairbrother G, Galea S, Pfefferbaum B, Wilson-Genderson M, Vlahov D. Determinants of counseling for children in Manhattan after the September 11 attacks. *Psychiatric Services* 2002;53:815–822. [PubMed: 12096163]
- Thompson SJ. Factors associated with trauma symptoms among runaways/homeless adolescents. *Stress, Trauma, and Crisis: An International Journal* 2005;8:143–156.
- Time. An American tragedy. *Time* 2005 September 12;:166.

- Ursano, RJ.; Fullerton, CS.; Norwood, AE., editors. Terrorism and disaster: Individual and community mental health interventions. New York: Cambridge; 2003. Terrorism and disasters: Prevention, intervention, and recovery; p. 333-339.
- Vernberg, EM. Intervention approaches following disasters. In: LaGreca, AM.; Silverman, WK.; Vernberg, EM.; Roberts, MC., editors. Helping children cope with disasters and terrorism. Washington, DC: American Psychological Association; 2002. p. 55-72.
- Williams RJ, Chang SY. A comprehensive and comparative review of adolescent substance abuse treatment outcome. *Clinical Psychology: Science and Practice* 2000;7:138–166.