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The most serious impact of disasters, either natural or "man-made," on families and communities, is through the death or incapacitating injury of their members. Families that can face the reality of death after a disaster event and encourage each other to work out their grief will move toward healing more quickly (Smith, 1983). However, in a 1958 study, Silber, Perry and Bloch reported that stresses induced by parent-child interactions during a disaster are considerable, especially when parents have difficulty dealing with their own fears and are less effective in providing support for their children. Other studies of parents and children dealing with death-related issues (Becker & Margolin, 1967; Burke, et al., 1982; McNeil, 1983; Wass & Cason, 1984; Weber & Fournier, 1985) have emphasized the crucial influence on children of parental handling of a death crisis, and the importance of emotional responsiveness and relevant communication between parent and child.

Families and their special problems after a disaster have been studied only minimally, although most researchers have pointed out that families are primary and natural potential stress-buffering units during all stages of a natural disaster (Bolin, 1976; Raphael, 1983; Smith, 1983). In an attempt to provide further information on family coping strategies with death after a "human-caused" disaster, I sought a quick-response grant in 1985.

On Tuesday, June 25, 1985, the Aerlex Corporation, a fireworks factory in rural Pawnee County, Oklahoma, exploded, destroying the entire plant and killing 21 of the 26 employees then working in the factory, four of whom were teenagers. Three of the surviving victims were injured, including the plant owner, whose 18-year-old stepson was among the dead. Numerous other families in small communities throughout this rural area were seriously affected (Dallas Times Herald, June 27, 1985).

Through contacts with three churches in Pawnee County, I was able to conduct interviews with 20 families in an exploratory study, investigating the following questions:

1) What were the immediate sources of stress for survivor families and their reactions following the plant explosion?
2) What were some characteristic communication patterns between parents and children after the disaster?

3) What patterns of family cohesion and adaptability changed from pre- to post-disaster? What implications did these relationship dimensions have for parent-child communication about the deaths of family members and friends?
4) What other specific factors have affected the grief process for survivor families?

Sample and Methods

The sample size of twenty families was small, by general standards for empirical research, but each family in this group provided information helpful for an exploratory study. Six fathers and 16 mothers, ranging in age from 24 to 52 years, were interviewed; their families included a total of 31 children, ages four through 18 years. All twenty families were "survivors" in some way; that is, at least one member of the family had been killed in the explosion, or at least one member of the family had a close relationship to someone who died. Parents interviewed were primarily working class and middle class, with all the men and the majority of women employed at least part-time. All but two of the parents belonged to a church in their community, and most of them attended church services at least once a week. Most stated that their religious beliefs were very important to them. Thirteen parents were married for the first time, six were remarried, and three were divorced. Both the mother and father in <u>two</u> families were interviewed; these families had each lost a teenage child in the explosion.

Of the 31 children whose reactions were described by parents, 21 were adolescents (ages 12 through 18) and ten were children ages 3 to 10. There were 14 male and seven female adolescents, and seven male and three female younger children. The average age of adolescents was 15.7 years; and the average age of the younger children was 5.8 years.

Parents were interviewed six weeks post-disaster about their experiences during and after the factory explosion, especially regarding their children's reactions to the deaths of family members and friends. Communication patterns and family relationships before and after the explosion were explored, and a paper-and-pencil measure of family cohesion and adaptability (Olson, et al., 1985) was obtained from each subject.

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Abstract

Family reactions to 21 deaths occurring in a rural Oklahoma fireworks factory explosion were explored through structured interviews of parents, six weeks post-disaster. Sixteen mothers and six fathers of children ages four through 18 years discussed family communication behaviors and children's reactions to the deaths of family members and friends. Subjects also completed a questionnaire describing their family relationships before and after the explosion. Findings revealed primary sources of of disaster-related stress for both adult and child survivors. As predicted coping behaviors, patterns of family cohesion and adaptability changed after the explosion, and showed some relationship to parent's communication styles, as shown in case examples. Parents differed in ways of sharing or withholding information from young children and teenagers about disaster events, and in ways of providing reassurance about the deaths of loved persons. Implications for education and further research are discussed.

Findings

Immediate sources of stress

Weisman (1976) has proposed that coping with unexpected and calamitous death presents special problems for the bereaved, and this was borne out in the present study. The primary source of stress for all families was the sudden, overwhelming shock of hearing the explosion, seeing the huge clouds of smoke, and realizing that the fireworks plant had been destroyed. People for miles around the factory area were immediately aware of what had happened, and although some thought it might have been an oil well exploding, or even an atomic bomb, there was soon no doubt that the plant was the cause.

The next reaction was the painful impact of learning that nearly all persons present in the factory had been killed, including specific family members and close friends. At first, this learning was accompanied by general disbelief, or a frantic search for facts mixed with hope that what was feared was not true. As the realization was made clear that only a few persons had escaped death, the immensity of the tragedy began to sink in, along with crushing sorrow and awe at the suddenness of multiple deaths, seemingly "all in a split second."

A third source of stress, unique to this type of disaster, was the fact of body disintegration of the victims. As more facts were learned about the results of the explosion, survivors faced the horror of thoughts of the victims' violent mode of death. While this was a special concern of those who realized that close family members had been killed, the awful truth weighed heavily on the minds and hearts of all survivors, as revealed in repeated comments through each interview. One woman expressed the common feeling: "The way they died is so hard to think about, all blown to pieces, so suddenly. Such a horrible way to die!"

An additional source of stress for families, adding to their shock and grief, was their perceived invasion of privacy by newspaper and television reporters and photographers. Media personnel from nearby cities and from other states, such as Texas and even New York, appeared in the area "almost like magic," soon after the explosion. Some landed in helicopters in the center of one small town, and followed grieving families into crowded church parlors or the local market. Others set up cameras outside a funeral home,

or attempted to crawl under barriers erected around the disaster site. There was general strong resentment toward these intruders among survivors and those who were trying to help create order in the confusion or comfort the bereaved. As Raphael (1983) has pointed out, when destruction is "massive and sudden, and is vividly portrayed in the media, it cannot be denied, because it is so publicly stated. Thus it is very difficult for those involved and the bereaved to shut out, even temporarily, the trauma and its implications...The public nature of these deaths, while offering public affirmation of the loss and grief of those affected, may also create extra sources of stress." (p. 336)

Immediate responses

Predictably, many people in the area sought immediate affiliation with others for information and reassurance. Many called close friends or neighbors. Telephone lines at the county sheriff's office were jammed with frantic calls. Many others ran to the village store, a common social center in one small town, to congregate with other frightened and hysterical people. Some tried to go to the factory site, but they were prevented by police barricades from getting close. Eventually, dozens of people gathered in the parlors of a church for group solace and comfort from the pastor. Grieving teenagers clung together in several homes near the county high school. When news reached a church camp 25 miles away, counselors tried to calm several hundred 10- and 11-year-old campers. One boy, brother of a teenager who died in the explosion, was driven home from the camp by a young minister, who helped him locate his family.

Protection of children was a common response of most parents, especially of the younger children. Many parents were unable to hide their own first reactions of shock and grief from their children, and were later forced to answer questions they felt unprepared to face. Many of the children watched television reports of the disaster, and learned details of the deaths of family members and friends that their parents did not know how to explain. Still, most tried to couch explanations in careful terms that they hoped would soothe and reassure anxious children. Many of the young children's questions reflected their curiosity about what the dead people looked like, and if "getting blown up" would hurt. Older children and teenagers also expressed great anxiety about the possible suffering of those who had died. Parents found these matters extremely difficult to handle in most cases.

It is clear that significant loss affects people physically (Schneider, 1984).

For the first six weeks, post-disaster responses to stress in children and adolescents, as reported by parents, included stomach upsets, headaches, sleeping and eating problems, and nightmares. One 16-year-old girl's hair began to fall out, and she also suffered from dizzy spells. Weeping spells and clinging tendencies, irritability, restlessness, and concerns about death were also common among all children. Symptoms of depression appeared most often in adolescents, and were expressed through agitated behaviors or with flat affect, typical of the varied and complex responses of adolescents to death (Fleming & Adolph, 1986).

Family communication patterns

Findings in social learning studies indicate that a direct influence on children's feelings about death is that of parents' behaviors. Wass and Cason (1984, 40-42) propose that "open communication with children about such subjects as death requires that parents themselves have relatively low anxieties and fears concerning death, that they are willing to confront such issues and encourage their children to express their fears rather than to repress and deny them."

This exploratory study focused on the problems involved in family communication after death-related crisis, specifically investigating aspects of the Circumplex Model of Marital and Family Systems (Olson, Sprenkle, & Russell, 1979), in which communication among family members affects and is affected by the unique relationship qualities of cohesion and adaptability. According to Galvin and Brommel (1982), cohesion implies the "emotional bonding of family members," and adaptability is defined as "the ability of a family system to change its power structure, role relationships, and relationship rules in response to situational stress" (p. 13).

Under crisis circumstances, changes in such family relationships tend to occur in most families. As predicted, family cohesion and adaptability patterns of subjects in the present study changed in response to the tragic deaths of family members and friends, and resulting communication processes between parents and children apparently were also affected.

Family cohesion scores changed from pre- to post-disaster for all but three of the subjects, as follows (see Figure 1): Six parents perceived their families as becoming more disengaged or separated (low cohesion) after the disaster; ten parents reported their families as becoming more connected

or enmeshed (closely bonded); and three parents reported slightly less enmeshment after the disaster. The three (all fathers) who thought their families' closeness had not changed perceived them as being enmeshed (highly cohesive).

Family adaptability scores also changed from pre- to post-disaster for all but three of the subjects (two of whom had also not changed in cohesion), as shown in Figure 2. Ten parents saw their families as becoming more rigid or more highly structured in rules and role relationships; nine parents perceived their families as becoming more flexible or chaotic after the disaster, with little stability or order. Those whose perceptions of their families had not changed were classified as rigid, evidently desiring to repress change and growth.

Specific changes varied from family to family, related to unique loss situations and the personalities of the persons involved. Examples of such individual changes can be seen in cases of two families, both of which had lost a teenage child in the explosion.

I) The A family consists of a remarried couple and the wife's 13-year-old son, C. Mrs. A's 18-year-old son, K, was killed in the factory explosion. Mr. A was owner of the plant, severely injured in the explosion, and since that time has endured a series of governmental hearings and several lawsuits. The A's have sold all their business holdings and declared bankruptcy. Mr. A, a Vietnam veteran, although open to a general discussion of his many losses, and admitting that in the explosion he "looked Death right in the eye," shows a strong tendency toward the disengagement dimension of the family cohesion measure, perhaps as a way of coping with his stressful situation. In contrast, Mrs. A, grieving the death of her son, has moved from a disengaged dimension to a highly enmeshed (cohesive) dimension, becoming much more closely involved with and concerned about her family. She is especially anxious about her surviving son and her husband's reactions to the traumatic events.

II) The B family consists of a mother, father, and two teenage sons, ages 13 and 15. Their 18-year-old adopted daughter, M, was killed in the factory explosion. Mr. B was manager of the plant, and one of three persons who escaped injury or death. The B's had moved to the area only a year before the disaster, and still have few friends in their community, as they both now work in a city 30 miles away. Their marital relationship appears to be quite close, but they are somewhat isolated from their sons, who appear to be dealing with their sister's death in their own private ways. This tendency is somewhat apparent in the B's family cohesion scores, both of which moved toward disengagement after the explosion. Mr. B's adaptability score moved toward the chaotic dimension,

> while Mrs. B's adaptability score moved from chaotic toward flexibility. These changes may imply that Mr. B has reacted most strongly to the stress of recent events, with feelings of loss of control. (He commented, "I have lost the ability to show any emotion.") His wife appears to be struggling to gain some control over the devastating effects of their losses.

According to Olson and his colleagues (1979), who developed the original Family Adaptability and Cohesion Evaluation Scales (FACES), families operating on either extreme of the cohesion or adaptability dimensions are often less functional, as they become too rigid, too close, or too isolated. Some families surviving the Oklahoma factory explosion showed changes to extreme cohesion and adaptability dimensions, and this was of special interest in this study.

Communication patterns between parents and children were investigated, and individual family patterns were categorized as to mode or manner of exchanging information and/or support after the disaster. In a 1980 study of parental communication with children about death, McNeil proposed a model of "communication styles" in which parents dealing with emotional issues related to death could be categorized as follows:

1) Open-Warm - A way of talking, listening, and sharing openly with a child, answering questions honestly and encouraging concerned exploration of feelings.

2) Open-Cool - A way of talking openly with a child, answering questions honestly, but keeping discussion of feelings to a minimum.

3) Closed-Warm - A way of responding to a child's feelings about the subject, warmly and with concern, while keeping discussion of information to a minimum, and attempting to smooth over any anxieties by avoiding difficult issues.

4) Closed-Cool - A way of avoiding discussion of either facts or feelings by focusing the child's attention on other matters, by correcting his/her behaviors, or by simply leaving him/her alone.

While the small sample size in the present study precluded a thorough statistical analysis of parents' communication styles and children's coping behaviors, individual interviews revealed some evidence of their relationship to

family cohesion and adaptability scores.

Families who had both high cohesion (enmeshed) and high adaptability (chaotic) scores, or who had both high cohesion (enmeshed) and low adaptability (rigid) scores, disclosed evidence of great stress and difficulty with parent-child communication about death, as in the following examples:

I) The C family (enmeshed, chaotic) consists of a recently divorced mother, her 16-year-old daughter, and a three-year-old son. The three of them are "very close." But Mrs. C. admits she has given her children a great deal of freedom, since she works full-time. Her daughter, T, spends most of her free time with friends, "natural for a teenager, I guess." When T's boyfriend, "the boy I was going to marry," 18-year-old D, was killed in the plant explosion, T was devastated, and stayed with girlfriends for several days. She has since been depressed, sleepless, weepy, and generally inconsolable. Mrs. C is extremely concerned about her, stating "I can handle pain, but nobody likes to see their child hurt like that." She says she wants to protect her daughter as much as she can, because the family has already been through "a lot of trauma" and she wants T to "stress the positive things, forget all the bad things...I don't want her to grieve--I tell her to 'Put on a happy face!'" (Mrs. C was classified as a Closed-Warm communicator.)

II) The D family (enmeshed, rigid) consists of a mother, father, and three children, ages 3, 7, and 10 years. Their close friends, the Y family, lost a teenage son in the factory explosion, and on the day of the tragedy, the D's took the Y's younger son home to stay until his parents returned for him. When Mr. D entered his house, his youngest child announced, "We saw Y get killed on TV!" Mr. D said, "I looked at my wife, she looked at me, and we let it drop." The children were full of questions, as well as interest in and concern for their stunned and grieving young friend, but the D's decided it would be better for all concerned if there were no talk of the explosion that night. As far as Mr. D knows, there was no discussion among the children. (Mr. D was classified as a Closed-Cool communicator.)

Every family has a set of relationship agreements or rules that govern communication behavior. One of the functions of such rules (which may be spoken or unspoken) relates to what one is allowed to talk about. Death is often a "taboo" topic in many families, especially as a subject that is clearly not discussed with children. Also, families-of-origin, where development of common meanings begins, may provide blueprints for the communication rules of future generations (Galvin & Brommel, 1982, pp. 46,

58). The case of a fifth and sixth family (both enmeshed on the cohesion scale, and rigid on the adaptability scale) in this sample of survivors illustrates these ideas, as well as emphasizing again the precarious state of families in crisis who may become too close or too rigid to function well.

> Ann and Betty (fictitious names) are sisters, who live with their husbands and young children next door to each other. In their childhoods, their father was killed in an automobile explosion; Ann, as the older child, was told details of that accident, and had nightmares for many months. "I swore I'd never tell my kids so many horrible things." Betty, the younger sister, said, "They kept the news of my father's death from me--it would have been better to know, because I wondered about it for years, and imagined awful things." After the fireworks factory explosion and death of Ann's mother-in-law (who was also "like a grandmother" to Betty's children), a family conflict arose over what the children should or should not be told. Betty was frank with her four-year-old son Kevin, who asked if G was "blowed up in the 'splosion." Betty said, "I never lied to him--I told him 'Yes, she was."" Such frankness was not appreciated by Ann and her husband, whose seven-year-old Bobbie was informed by his little cousin that the grandmother was "blowed up into little pieces." Ann had previously informed Bobbie that "Grandma fell down in the explosion and hit her head and died," believing he did not need to know "the gory details." Immediately, Betty was told she must keep Kevin away from the other children, including other cousins gathered next door with the family. Betty told her son that others were "upset" and he must play by himself. He was bewildered about being separated from the other children, and anxious about being "blowed up" for quite a time. Family relationships were also strained for weeks over this disagreement.
> (Ann was classified as a Closed-Warm communicator; Betty was classified as Open-Cool.)

Talking with young children/adolescents

One factor in parents' communication about death after the explosion was the age of the children. Of the six parents who had children under ten years of age, only two discussed specific details of the deaths, and these differed in content and "style" (see example above). Language used with very young children was most often phrased in quasi-religious terms, such as "Grandma went to heaven to be with Jesus" or "God put his hand over everyone." When children asked questions related to parents'

explanations, such as "Is Grandma an angel?" parents were likely to continue the fantasy with such comments as "Yes, she's a special angel, who watches down upon us from heaven." Further questions, such as "Will I be an angel some day?" or "Why does God want us to go up to heaven?" compounded the complexity of discussions in this vein. Even further difficulties ensued when children were taken to view the grave of a relative, as in "How can Grandma be up in heaven when she's buried in the ground?" Parents who found themselves in this dilemma admitted to being unable to pursue the subject with any reasonable explanations.

The majority of children (21) of interviewed families were adolescents, with an average age of 15.7 years, and their interactions with parents about the explosion were substantially different from those of families with younger children. These adolescent children learned about the deaths of family members and friends in a wide variety of ways. Many heard the explosion and inquired about the cause; some were at work, or attending summer camp, or visiting friends, or even asleep when the disaster occurred. Several teenagers immediately drove out to the plant, where they were turned away from the site; others hurried to the hospital to inquire about possible victims. It was an extremely confusing, emotional period for all concerned, and early intervention by parents or other adults was not always available.

Parental coping with their adolescents' grief reactions varied, depending on the parent's grief and often on the sex of the parent. The mother of a teenage boy who was killed was especially overwhelmed, and her 13-year-old son was cared for by friends during the first days after the explosion. One mother working in a nearby city was called by her daughter's friend to come to the hospital where the daughter, overcome with shock and grief, had collapsed. Fathers admitted to a lack of skill for the task of helping their children with the immediate crisis. One father commented, "They don't talk to me a lot about what happened with them--probably more to their mother." In fact, all fathers stated it was difficult for them to talk with their children about most subjects except for sports or schoolwork. Another father confessed, "Feelings are uncomfortable. I get away from them somehow." But that father did make an effort to help his distraught son deal with the death of a close friend. They stayed up late together several nights to talk about the dead friend, tried to recall the funny things he and the friend had done together, laughed and cried, and were somehow comforted in their grief.

Mothers in this sample were often understanding and supportive of their adolescent children's reactions, and talked with them about their thoughts and feelings, as in the following examples:

> My son asked me, "When will the hurt go away?" I told him it would be painful for awhile, but would hurt less eventually. I told him he'd always have memories of his friend.

> My daughter thinks about death a lot now. She told me, "I don't think I'll live to go to college--I'm afraid death will happen to me, too." I needed to know that she was afraid. I told her it was rare that people have to face such a tragedy at her age, that she must pick up the pieces and go on with her life.

> J. was so angry at first, he paced the floor and hit things. He wouldn't believe D. was dead, yelled at me that I didn't know. Now he talks more to me, especially when he wakes up with nightmares. He sometimes just needs to be close. Once he gave me a hug and said, "I'm glad you're alive."

> S. was worn out for two or three weeks. She couldn't eat or sleep, or if she slept she woke up crying. I let her talk, tried to get her to cry it out. "The longer you hold it in, the worse it will be." She asked "Did H. suffer? Did she know she was going to die?" I told her I felt like there was no time to think of death--God kept her from suffering by grabbing her instantly.

Teenage peers were also a major source of comfort and companionship during the first weeks following the tragedy, as adolescents confided feelings more often to friends than to family. One parent said, "She and her friends shut us out for awhile, but I didn't intrude. She was desperate to be with someone like the friend she lost." Occasionally an adolescent group's fears and fantasies escalated and increased the anxieties of participants. One mother reported:

> In a town this size there are so many rumors. The kids had worked themselves up to some hysteria, building up a lot of dramatic details about how their friends had died, the horrible suffering, the broken bodies, all that. I found out from a niece who worked with the ambulance service, then sat my son down and told him the real truth: that people had not "waited to die," that there was instant death for everyone, and no bodies left to look at. A. cried, but I think

> it helped him cope. Knowledge is the answer--if they know and face the truth, they can cope with it. Uncertainty often causes fear.

In all cases of young children or adolescents reacting to the deaths of family or close friends, those who had at least one parent who talked with them about feelings and thoughts surrounding the tragedy were most likely to return within a few months to normal behaviors. Those with fewer adult resources, or who were struggling with other personal problems, appeared to be still greatly troubled by their losses, even eleven months after the factory explosion.

Factors affecting survivors' grief

The unique nature and meaning of a loss sustained or a relationship severed are individual in nature (Rando, 1984), and each person's grief will be idiosyncratic. Previous death experiences undoubtedly influence the coping strategies and defense mechanisms used by the mourner, especially if former losses are unresolved. Findings in this study appear to support Smith's (1983) suggestion that, in general, families that cope with disasters least effectively are those that have low family adequacy in normal times. Parents who talked of family problems that had been major concerns before the disaster, such as divorces, alcoholism, deaths from accidents or suicides, job instability, or personal estrangements were often those who were finding disaster losses to be most overwhelming.

Other environmental factors may have affected the grief process for survivors of the Oklahoma explosion. One major influence is the perception of preventability of such a disaster, and subsequent implications. Bugen (1979) proposes that when mourners are convinced that their significant losses are human-caused and so preventable, their grief will likely be prolonged and especially intense. Activities involved in mass-producing volatile and potentially dangerous products (such as fireworks) are vulnerable to human error. Such errors, when human lives are at stake, are inevitably perceived as preventable, and this is a critical factor in the emotional impact and coping process of survivor-victims.

One of the first, major efforts in resolving dilemmas created by a "man-made" disaster is to seek cause. Thus there are often intricate investigations of possible causes and reasons, with accompanying emotional com-

ponents such as anger, fear, guilt, and the strong need to place blame on someone (Raphael, 1984, p. 332). The factory explosion has been the focus of formal inquiry through the federal Occupational Safety and Health Administration, and recently through the Justice Department. Blame has come from individuals affected by the tragedy, as well, as evident in the harrassment by anonymous phone calls to the plant owner's family with threats to blow up their home for purposes of revenge. These events have added to the ordeal and have exacerbated this family's grief.

A second factor affecting some grieving families was conflicts regarding funeral arrangements. An especially poignant example is the case of the family whose 18-year-old daughter was killed. Because of difficulties in identifying her body--when there was literally no body to be found--her funeral was postponed for two weeks while dental records were sought from another state and application to a nearby crematory (closed during the holiday season) was finalized. Extended family members from out of state arrived for a funeral that was delayed, so departed without finding closure for their grief. The parents' final decision to cremate the girl's remains was extremely difficult for them and reflected a profound distaste for this process. Some family members objected on religious grounds, resulting in a family conflict. Cremains were buried in a simple ceremony, but the family felt empty and incomplete. The mother stated, "There's nothing left of her but her picture--it's hard to believe that's her buried there."

A positive influence on survivors, however, came from the social support offered by surrounding communities during the funeral ceremonies. Although few of the younger children of interviewed parents attended funerals, for various reasons, a majority of adolescents attended one or more of the nineteen separate funerals, often with their parents or with families of close friends. Most attended the rites held for an 18-year-old high school football star, noted as the largest funeral ever held in the town of Cleveland, and many young men who had been his friends were pallbearers. In addition to private ceremonies, a memorial service was held to honor all the dead. This service was attended by the governor of Oklahoma and many community leaders, providing recognition of all survivors, known and unknown, of this tragic event.

There is little evidence that any of the especially vulnerable

families had sought or were finding help from mental health agencies. However, many in this rural "Bible Belt" area had sought assistance and support from their local churches or pastors, and emphasized that "our faith has pulled us through." Those without connections to a church or other community group were obviously struggling to adjust through their own resources to life after the disaster.

Summary and Implications

Results of this exploratory study of twenty bereaved families surviving a fireworks factory explosion show reactions of shock, grief, somatic distress, affiliation needs and protection of children, similar to those found in other disaster studies. An investigation of family cohesion and adaptability patterns before and after the tragic deaths of family members and friends indicated effects of these family relationships on communication processes. Families with changes to very high cohesion and high adaptability scores, or high cohesion and low adaptability scores, tended to have more difficulties in parent-child communication about the crisis.

The importance of open parental communication and support for children and adolescents during death-related crises was reaffirmed. Examples of family coping behaviors in adapting to multiple deaths emphasized human - caused factors that affected the grief process.

Some implications for additional research may be:

- To use larger samples of families and control groups, including interviews of children and adolescents, as well as their parents;
- To investigate long-term effects of large-scale, unexpected disasters where death of family members occurs;
- To explore long-range changes in family cohesion and adaptability after a disaster and their relationship to parent-child communication processes;
- To investigate the effects of tragic loss on families with and without various support systems or parent educational preparation.

Figure 1. Changes in Family Cohesion[1] Scores, Pre- and Post-Disaster

(Norms):	Enmeshed (46-50)		Connected (41-45)		Separated (35-40)		Disengaged (10-34)	
Subjects	Pre	Post	Pre	Post	Pre	Post	Pre	Post
101					20	18		
102	43	40						
103					40	38		
104	48	48						
105			42	42				
106			44	42				
107					36	34		
108					37	35		
109	47			44				
110					38			32
111		47					33	
112		47	41					
113			42	44				
114			43	43				
115				44	39			
116						39	27	
117				43	38			
118			41	42				
119	46			44				
120						36	34	
121	46	49						
122		46	43					

[1]Olson, D.L.; Portner, J.; and Lavee, Y. FACES III: Family adaptability and cohesion evaluation scale. Family Social Science, University of Minnesota, St. Paul, 1985.

Figure 2. Changes in Family Adaptability[1] Scores, Pre- to Post-Disaster

(Norms):	Rigid (10-19)		Structured (20-24)		Flexible (25-28)		Chaotic (29-50)	
Subjects	Pre	Post	Pre	Post	Pre	Post	Pre	Post
101	18			20				
102							36	32
103		19	21					
104	18	18						
105	18	18						
106	12	11						
107					27			30
108						27	29	
109			24			26		
110			22	23				
111				22	26			
112	15	15						
113	14	15						
114			24	21				
115		19	20					
116	18							30
117							29	36
118		19	23					
119						25	30	
120			23	22				
121							36	45
122							29	38

[1] Olson, D.L.; Portner, J.; and Lavee, Y. FACES III: Family adaptability and cohesion evaluation scale. Family Social Science, University of Minnesota, St. Paul, 1985.

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APPENDIX I

Informed Consent Form

INFORMED CONSENT FORM

This document describes the research project and the particular ways in which we hope you will participate. Please read it carefully. Then, if you decide to participate, sign your name and record today's date.

Purpose of the Study. A major disaster places unusual stress on family members and communities. We are trying to learn how parents and children interact during and after an emergency situation such as the factory explosion you have recently experienced. We will also try to determine factors related to family communication and coping behaviors with this type of crisis.

Procedure. You are asked to participate in two interviews about your experiences during the recent disaster. The first interview will be held today. The next interview will take place within the next six months to one year. Each interview will take approximately one to one-and-a-half hours to complete. You will be asked questions about your background, your family life, your children's and your own previous experiences with death or other loss, and your children's and your own experiences and reactions to the factory explosion. Both during and at the end of the interview, we will also ask you to answer some questions on a paper-and-pencil questionnaire. These questions will concern your feelings about your family life both before and after the disaster happened.

Confidentiality. Your name will not be recorded on any of the information you provide, whether written or spoken. We will use a code number which will protect your identity and the identity of your family, but will still permit us to compare one type of information with another.

Results from interviews with the entire group of participants may be written up in scientific publications and/or presented at scientific meetings. However, after the final report of the research has been written, the written responses and interview notes will be destroyed. Until then, these materials will be secured in a locked file and only the investigator will have access to them.

Risks and Benefits. Since the topic of the recent disaster and the losses you may have encountered is a difficult one, re-living painful experiences in the interviews may make you uneasy, anxious, or sad. If this should occur, the researcher can provide a support person or counselor to talk with you. And you may feel that some questions unreasonably invade your privacy. If so, just tell us that you prefer not to answer.

On the other hand, you may find the interviews to be helpful and healing in terms of encouraging you to share your insights and feelings about your experiences. Also, by participating in the study, you will help us to learn how to help other people cope with such stressful situations. Finally, you will be provided with a copy of the completed study, if you wish to see one.

Voluntary Participation. Your participation is strictly voluntary. You are free to discontinue at any time you wish.

I have read and understand this description and agree to participate in the study under the conditions it describes.

_____ _____

Date Signature

Person in charge of the study (Contact for questions about the study):

Joan N. McNeil, Ph.D.
Department of Family and Child Development
Kansas State University
Justin Hall 310
Manhattan, Kansas 66506 Telephone: (home) 913-539-3653
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Contact for health concerns:

Pastor James Taylor
Terlton Baptist Church
Terlton, Oklahoma

Pastor Gary Washburn
First Christian Church
Cleveland, Oklahoma

APPENDIX II

PARENT INTERVIEW QUESTIONS

II. FAMILY COMMUNICATION:

Every family is unique in the ways they ordinarily talk about things with each other, and whether they show their feelings to each other or not. I'm sure you've noticed that even people in the same family are different from each other. We're interested in the ways that family members, particularly parents and children, talk to each other. For example:

13) Do you think most people in your family (both adults and children) usually talk about what they're thinking or feeling to each other? or do they usually tend to keep things to themselves?

(1)____ Usually talk to each other (2) ____Usually keep things to themselves

(3)____Other:(______________________________________)

14) Do some people in your family tend to confide in other family members more than others do?

(1)____ Yes (2)____No Remarks: ______________________________________

15) What kinds of subjects does your family usually talk about when you're all together, say, at the dinner table?

16) If you have problems, or things that may be bothering you, when do you usually talk about them?

(Does your child)
17) Do the children share in this kind of conversation--or do you usually wait un the children are not around?

(1)____Share in problem conversation (2)____Wait until children not around

(3) ____Other:(______________________________________)

18) Is it usually easy or difficult for you to talk about your thoughts and feelings with your family?

(1)____Usually easy (2)____Usually difficult (3) ____Other:________

____

19) What kind of subject is usually easiest for you to talk about with your child(ren)?
____

20) What kind of subject is usually hardest for you to talk about with your child(ren)?

____

21) Does your child(ren) talk to you about what he/she/they're thinking or feeling --often, occasionally, or does he/she/they usually keep things to him/her/themselves?

(1)____Often talks to me (2)____Occasionally talks to me

(3)____Usually keeps things to self (4)____Each child different

(5) ____OTHER:

22) What is usually the easiest kind of subject for your child(ren) to talk about with you?

23) What is usually the hardest kind of subject for your child(ren) to talk about with you?

24) Do you think he/she/they confide(s) personal thoughts and feelings more often to you, or to your husband, or to other children in the family?

(1)___more often to me (2)___more often to my husband

(3)___more often to other child(ren) (4) Other:_____

25) I'd like you to think back to your recent past--earlier this year, or maybe last year... Think of a time you remember when your child (one of your children) was AFRAID of something... Do you recall a time like that?

(1) ___Yes (2)___No

26)(IF YES)...What happened then?

27) What did your child say to you then?

28) What did your child do? (cry, have nightmares, hang on to you, etc.)

29) What did you do? (say)

30) Can you remember a time when your child (one of your children) was really ANGRY or MAD about something? Can you recall a time like that within the last year?

(1)____Yes (2)____No

31) (IF YES)....What happened then?

32) What did your child say to you then?

33) What did your child do? (cry, have tantrum, sulk, fight, etc.)

34) What did you do? (say)

35) How do you usually know when your child has something on his mind--that he(she) is thinking about, or is worried or maybe upset about? What does he usually do or say that gives you that idea?

36) Do you think there are some thoughts or feelings that s/he (they) doesn't share with you?

(1) ___ Yes (2)_ __ No (3)_ __I don't know (4) ___Other

37) How do you feel about it when you know s/he(they) doesn't tell you about something that's on her/his mind?

PAUSE.... Before we go any further, I'd like for you to take a few minutes to fill out this short questionnaire. It simply asks you to describe your family the way you WERE last spring -- before the big factory explosion happened... Just write in the number that describes your family best, on each item... the way they were last spring. (Put a 1 for Almost Never, 2 for Once in Awhile, 3 for Sometimes, 4 for Frequently, and 5 for Almost Always.)

FACES III, Part A (#38 - 57)

III. DISASTER EVENTS AND RESPONSES

Now, let's talk about the recent explosion in the fireworks factory. This was quite an unexpected, tragic event in this area, wasn't it...

58) What were <u>you</u> doing when the explosion happened?

59) Tell me more about it...What did you <u>think</u> when it happened?

What did you <u>do</u> next?

60) Did you know any of the people who were killed or injured? Were any of them family members, or friends?

(1)____ Yes, family members (Specify:_ __ __ __ __ __ __ __ __ __ __ __ __

__ __

(2)_ __ Yes, friends (Specify):__ __ __ ____ __ __ __ ____ ____ __

__ __

(3)____Yes, both family & friends (see above)

(4)____Yes, only acquaintances

(5)_ __No, knew no one

61) Did you go to any of the funerals?

(1)____Yes, one (2)____Yes, two (3) ___Yes, three (4)____Yes, more than 3

(5)____No, did not attend any funerals

62) Did you take your child(ren) to any of the funerals?

(1) ___Yes, one (2)____Yes, two (3)__ _Yes, more than two

(4)____No

63) (IF NOT): What did you do with your child(ren) while you attended the funeral(s)?

64) Had your child(ren) ever been to a funeral before ?

(1)____Yes, one (2)_____Yes, more than one (3)____No, never before

65) IF YOU TOOK CHILD(REN): What reactions did he/she/they have to the funeral(s)? What did they say or do?

66) (Whether you took your child(ren) to a funeral or not) did you do or say anything to prepare them beforehand?

(1)____Yes (Specify: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

(2)____No (Comments:_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

67) How did your child(ren) find out about the deaths that took place from the explosion?

68) What specific questions or comments have your child(ren) had about the deaths of people in the explosion?

69) What were your responses to those questions or comments?

70) What reactions of adults did your child(ren) see? (family or friends)

71) How did they respond to those reactions? (What did they say or do?)

72) What involvement did your child(ren) have with the tragic event itself? For example, did s/he/they hear the explosion?

(1)____Yes (2)____No (3)____Don't know

73) Did your child(ren) see the factory site after the explosion?

(1)____Yes (2)____No (3)____Don't know

74) Did your child(ren) see any of the victims after the explosion?

(1)____Yes (2)____No (3)____Don't know

75) Has(have) your child(ren) talked to any of the family members of (other) victims?

(1)____Yes (2)____No (3)____Don't know

76) Have you discussed the deaths of (family, friends) and the reasons for the explosion when the children were present?

(1)____Yes (2)____No (3)____Other: _ _ _ _ _ _ _ _ _ _ _ _

77) Has your family taken part in any sort of memorial to anyone killed in the explosion?

(1)____Yes (Explain:_ _

(2)_ __No

78) IF SO: Has(have) your child(ren) had a part in this memorial in any way?

(1)____Yes (Explain:_ _

(2)____No

79) Did this disaster event differ from any other experiences you've had with death?

(1)____Yes (Explain:_ _

(2)____No

(3)____ Not sure

80) Do you remember your first encounter with death when <u>you</u> were young?

(1) ____ Yes, clearly (2)__ _Yes, vaguely (3)__ _No, don't recall

81) (IF YES): How old were you, and what happened?

80) Since the explosion, do you know whether or not your children think about death?

(1)____Yes (2)_ __No (3) ___ Don't know

81) (IF YES) Do you think they (he/she) think about death a great deal, or once in awhile, or hardly ever?

(1)____A great deal (2)____Once in awhile (3)_ __ Hardly ever

82) How old do you think children are before they realize there is such a thing as death?

(1)___ Younger than 3 years (2) ___Three to 5 years (3)___Five to 7 years
(4) ___7 to 10 years (5) __ _ Adolescence (6)____Don't know

83) How old were <u>you</u> when you first knew there was such a thing as death? _ __ __

What happened then?

84) What do you think your child(ren) understand about death?

85) Do you think they (he/she) are more afraid of death now, than they were before the explosion happened?

(1)____Yes, more afraid (2)___No difference (3) ___Don't know

86) How do <u>you</u> feel about death, yourself?

87) What do you think parents should do or say to children, when they are afraid of things?

BEHAVIORAL CHECKLIST...

Everyone has reactions to major stress situations that are different from their usual behavior. You may have noticed some special ways your child(ren) have been behaving since the factory explosion--probably all normal reactions, but certainly not their usual behavior. I'd like to read a list of possible effects of the disaster, and have you tell me whether or not your child(ren) have experienced these:

Since the explosion on June 25, has(have) your child(ren):

88) had trouble sleeping at night? Yes__ _ No__ __ ??_ __

89) had nightmares? Yes ___ No__ __ ??_ __

89) had problems with bed-wetting? Yes __ _ No__ __ ??_ __

91) (IF YES: How have you handled any of these?

Have (any of) your child(ren) had:

92) stomach-aches or vomiting spells? Yes____ No____ ??____

93) headaches or dizzy spells? Yes____ No____ ??____

94) problems with eating? Yes____ No____ ??____

95) (IF YES: How have you handled any of these?

Have (any of) your child(ren):

96) been depressed, had weeping spells? Yes____ No____ ??____

97) been whiney and cling-ey? Yes____ No____ ??____

98) been reluctant to return to school this fall? Yes____ No____ ??____

99) appeared to be highly nervous and scared? Yes____ No____ ??____

100) (IF YES: How have you handled any of these?

Have (any of) your child(ren):

101) had temper tantrums more often? Yes____ No____ ??____

102) got into fights with other kids more often? Yes____ No____ ??____

103) been extra boisterous and troublesome? Yes____ No____ ??____

104) played games about violent death or explosions? Yes____ No____ ??____

105) (IF YES: How have you handled any of these?

106) Has your child (children) acted cool and not much affected at all by any of the tragic events?
Yes____ No____ ??____

107) What do you think is the reason he doesn't seem upset by everything?

108) Have you noticed any other unusual behaviors in (any of) your child(ren)?
(1)____No (2)____Yes: (Specify) _ _ _ _ _ _ _ _ _ _ _ _ _ _

109) Do you think your family as a whole has changed since the factory explosion?
(1)____Yes (2)____No (3) ____Not sure

110) (IF YES: In what ways do you think people have changed in your family?

IV. FACES III, Part B

Now, for the last thing, I'd like you to fill out the little questionnaire you did before -- but describing your family the way it is NOW -- after all that has happened to you this summer...

THANK YOU VERY MUCH FOR YOUR HELP WITH THIS PROJECT. IF YOU HAVE ANY QUESTIONS ABOUT THE STUDY, I'LL BE HAPPY TO ANSWER THEM..OR I'LL LEAVE YOU MY NAME , ADDRESS, AND PHONE NUMBER....

APPENDIX III

FACES III: Pre- and Post-Disaster Measures

FACES III - C

David H. Olson, Joyce Portner, and Yoav Lavee

1	2	3	4	5
ALMOST NEVER	ONCE IN AWHILE	SOMETIMES	FREQUENTLY	ALMOST ALWAYS

DESCRIBE YOUR FAMILY NOW:

_____ 1. Family members ask each other for help.

_____ 2. In solving problems, the children's suggestions are followed.

_____ 3. We approve of each other's friends.

_____ 4. Children have a say in their discipline.

_____ 5. We like to do things with just our immediate family.

_____ 6. Different persons act as leaders in our family.

_____ 7. Family members feel closer to other family members than to people outside the family.

_____ 8. Our family changes its way of handling tasks.

_____ 9. Family members like to spend free time with each other.

_____ 10. Parent(s) and children discuss punishment together.

_____ 11. Family members feel very close to each other.

_____ 12. The children make the decisions in our family.

_____ 13. When our family gets together for activities, everybody is present.

_____ 14. Rules change in our family.

_____ 15. We can easily think of things to do together as a family.

_____ 16. We shift household responsibilities from person to person.

_____ 17. Family members consult other family members on their decisions.

_____ 18. It is hard to identify the leader(s) in our family.

_____ 19. Family togetherness is very important.

_____ 20. It is hard to tell who does which household chores.

FAMILY SOCIAL SCIENCE, 290 McNeal Hall, University of Minnesota, St. Paul, MN 55108

Code #_____

FACES III - A

David H. Olson, Joyce Portner, and Yoav Lavee

1	2	3	4	5
ALMOST NEVER	ONCE IN AWHILE	SOMETIMES	FREQUENTLY	ALMOST ALWAYS

DESCRIBE YOUR FAMILY THE WAY YOU WERE LAST SPRING:

_____ 1. Family members asked each other for help.

_____ 2. In solving problems, the children's suggestions were followed.

_____ 3. We approved of each other's friends.

_____ 4. Children had a say in their discipline.

_____ 5. We liked to do things with just our immediate family.

_____ 6. Different persons acted as leaders in our family.

_____ 7. Family members felt closer to other family members than to people outside the family.

_____ 8. Our family changed its way of handling tasks.

_____ 9. Family members liked to spend free time with each other.

_____ 10. Parent(s) and children discussed punishment together.

_____ 11. Family members felt very close to each other.

_____ 12. The children made the decisions in our family.

_____ 13. When our family got together for activities, everybody was present.

_____ 14. Rules changed in our family.

_____ 15. We could easily think of things to do together as a family.

_____ 16. We shifted household responsibilities from person to person.

_____ 17. Family members consulted other family members on their decisions.

_____ 18. It was hard to identify the leader(s) in our family.

_____ 19. Family togetherness was very important.

_____ 20. It was hard to tell who did which household chores.

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