**MENTAL HEALTH SERVICES PROVIDED IN THE
AFTERMATH OF AVIATION DISASTERS**

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This dissertation is dedicated to those whose lives have been forever changed by the tragedy of an aviation disaster. It is hoped that this work offers some degree of validation of the pain caused by these events, as well as the impetus to undertake continuing research in this area. Specific mention must be made of those who elected to participate in this study; to you I extend my deepest gratitude.

Abstract

The last decade of psychological research has seen an increased effort to understand and formulate intervention strategies for psychological distress that occurs in the aftermath of aviation accidents. A number of theories have surfaced as to the most efficacious approaches to psychological treatment in this area. Since the beginning of these efforts over twenty years ago, the science of responding to these disasters has become more informed and approaches fine-tuned. However, how well do these advances in knowledge translate into actual practice? The intention of this study is to contribute such feedback via the perceptions of those who have interacted with mental health professionals after being involved in an air disaster, and to seek a preliminary perspective on whether these interactions have improved qualitatively over time.

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I. Introduction

Every year, the image of civil aviation as a safe and efficient means of travel is challenged by air disasters which claim hundreds of lives worldwide. Despite numerous advances in technology, training, and the knowledge gained from investigating previous air crashes, these disasters continue to occur. Great effort is expended to elucidate the causes of these tragic events so as to decrease the likelihood of their reoccurrence, as well as to reassure the traveling public that the chance of being involved in a fatal aircraft mishap is infinitesimally minute.

As one may expect, the needs present in the aftermath of aviation disasters are many. They range from the rescue of survivors and recovery of human remains, to initial analysis of wreckage, to media contact and issuing public statements, to the logistics of attending to family members of those on board the aircraft, to mention a few. In addition to the physical stress imposed upon victims of air disasters, the psychological trauma of sudden loss or involvement in a life-threatening situation is an element which demands an equal amount of professional competence and dedication.

Scores of studies have been completed to assess the psychological impact of both natural and man-made disasters. Over the past ten years, an increasing number of studies have examined the aftereffects of aviation disasters upon those who have survived them or who have participated in recovery operations. The common occurrence of symptoms of distress that are evident in the aftermath of these catastrophes can warrant professional intervention, depending on the severity of the symptoms. However, the type of intervention and the manner in which it is provided may need to be somewhat or even significantly different in order to be of maximal assistance to this specific population. Researchers have noted instances in which attempts to apply preexisting clinical techniques to newly-emerging problems are less successful unless some adjustments are made to the interventions themselves, although that is not always the case (Lukasik, 1991).

The interest to provide psychological assistance after an aviation disaster is a relatively recent one (Williams, Solomon, & Bartone, 1988). Prior to this, psychology had been involved in other aspects of the aviation industry; accident investigation benefited from input by behavioral

scientists, technological advancements of aircraft and their complex systems necessitated the work of human performance specialists, and clinical psychologists have long been providing assessment expertise in personnel selection and screening. As far as attention to accident victims was concerned, this was typically focused on treatment of physical injury resulting from fire and impact forces.

More recently, support for the idea of providing psychological assistance to victims of transportation disasters has gained momentum. It has been suggested that persons who experience a major disaster and concomitant acute stress reactions are at an elevated risk for the subsequent development of posttraumatic stress disorder (Birmes, Arrieu, Payen, Warner, & Schmitt, 1999). Lundin (1995) asserts that the very prevalence of these events makes learning about their psychological impact more important. Further, there may be much to be learned about the relationship between biological and psychological symptom presentations associated with the effects of traumatic stress. Also, the characteristics of air disasters that make them unique when compared with other types of transportation mishaps (or even natural disasters)

lend credibility to the need for well informed, rather than well intentioned efforts by mental health staff (Butcher & Hatcher, 1988). That they are often sudden and unexpected, create large-scale destruction, often attributed to human error and thus can provide a focus for extreme emotion, and that they can subject their victims to the isolating effects of being away from familiar surroundings, serves to present survivors with a distinct set of circumstances which must be navigated in maintaining and restoring the previous level of functioning. In this vein, the authors indicate that the reduction of long-term mental health consequences may be possible when intervention is provided in the immediate aftermath of a disaster and even go so far as to make recommendations for psychological services in airport disaster plans.

While the value of psychological services for victims of air crashes has enjoyed increased visibility in the literature, little research exists which attests to the efficacy of interventions which have been implemented (Williams, Solomon, & Bartone, 1988). In fact, Butcher and Hatcher (1988) have characterized efforts to provide this psychological aid as more of an afterthought, which is "probably effective." This concept is relevant when

considering the preventative aspect of intervening in the face of crisis. The authors make a distinction between outcome evaluations, which examine the impact of intervention, and process evaluations, which assess the success of implementation of interventions.

This dissertation is joined by several others that have investigated the psychological services provided to air disaster victims. Luu (1999) developed a protocol which seeks to address the specific needs of air disaster victims. This effort has at its aim returning individuals to their pre-event levels of functioning through support, education, and counseling, and it recognizes the effects an air disaster can have on the level of the impacted community. Similarly, Pollard (2001) examined the impact of air disasters upon flight attendants in order to understand the experience from this unique perspective, in the hope that it may shed light on how best to create governmental and organizational policy. This author made use of personal narratives of flight attendants to collect and synthesize data using a qualitative case study approach. Finally, Coarsey-Rader (1994) undertook an extensive study that investigated the perceptions of air disaster survivors and family members of passengers who were killed of how well

the many different agencies involved sought to address their psychological trauma. This author has since gone on to provide consultation to the civil aviation industry regarding the creation of sound post-accident reaction plans to see to the well-being of those who are affected by an air crash.

In an attempt to address this concern about the efficacy in disaster response for air crashes, the United States Congress drafted a piece of legislation which directed the National Transportation Safety Board and individual airlines to provide and coordinate assistance to survivors and family members of those killed in crashes on U.S. soil (Aviation Disaster Family Assistance Act of 1996, H.R. 3923, 104th Cong., 2nd Sess.[1996]). This legislation, subsequently signed by U.S. President Bill Clinton, then became the Federal Family Assistance Plan for Aviation Disasters (National Transportation Safety Board, 1999). The goal of this plan is to assign responsibility to responding airline, state, and federal agencies to develop procedures and support plans when an air disaster involving a significant number of fatalities/injuries occurs. Under Section 6 (General), part f. of this document, one of the tasks of the mission statement to provide family assistance

is to "provide psychological and logistical support and services to victims and their family members" (NTSB, 1999). Additionally, of the seven Victim Support Tasks outlined under Section 7 (Responsibilities), part b. (Airline Tasks) makes the offering of mental health services by qualified personnel a matter of routine, and part c. (American Red Cross- Family Care and Mental Health) enumerates how support services such as crisis and grief counseling will be managed.

One of the questions this proposal puts forth is whether the quality of psychological services rendered in the aftermath of aviation disasters truly been improving. That is, given the academic efforts to understand this phenomenon and subsequent applications of disaster and traumatic stress theory into clinical practice, is the field of clinical psychology moving in the right direction in providing competent and sensitive care to reduce the suffering of individuals and/or groups affected by these events? A corollary to this question, then, is the following: Has the aforementioned Federal Family Assistance Plan for Aviation Disasters had an impact on how effectively these services are currently being delivered since its enactment into policy?

There are two hypotheses in this dissertation; the first is that in the United States, access to psychological care in the wake of air crashes has markedly improved, and the second is that the quality of such care has also improved.

One of the earliest documented responses by clinical psychologists to an aviation disaster occurred in September 1978, when Pacific Southwest Airlines Flight 182 plunged into a residential neighborhood near San Diego. A group of private practice psychologists responded to the needs of rescue workers attending to the disaster, who were presenting with a number of emotional and behavioral symptoms such as signs of depression, phobias, emotional dyscontrol, obsessions, and even signs of psychosis (Shuchter & Zisook, 1984). Crisis intervention techniques that were brief in nature appeared to be helpful for those individuals in distress.

On July 19, 1989, faculty and graduate students from the Department of Psychology at the University of South Dakota offered to provide professional assistance in the aftermath of a catastrophic crash landing at Sioux City, Iowa's airfield (Jacobs, Quevillon, & Stricherz, 1990). There were a large number of fatalities as well as

survivors, which created a significant need for mental health services for survivors and family members who lost loved ones in the crash. Despite there being an adequate medical response to the tragedy, there was little organization as to how mental health services would be provided. The authors, as a result of their participation in the response, describe practical guidelines in the implementation of a sound mental health disaster plan. This was with the intention of speeding the delivery of service to clients, minimizing the chaos following a disaster, and reducing the impact upon those who are responding to it.

The Department of Mental Health, Mental Retardation, and Developmental Disabilities of Nassau County, N.Y. has drawn up just such a plan (Fornari, Fuss, Hickey, & Packman, 1991). Their plan, which had been in place for two years and was integrated with the county's Civil Preparedness Plan, called for the provision of crisis intervention for survivors and relatives of victims and survivors, as well as the referral of survivors and relatives to community mental health services in the event of a crash. This plan was tested on January 25, 1990, when a large jetliner crashed on Long Island while attempting to land at New York's JFK airport. For the next eight days,

the disaster mental health response team assisted victims through their trauma and its aftermath, providing a number of services, including outreach and engagement, emotional and social support, assessment, education and assurance, and organization and advocacy.

Many of the studies in the literature have focused on this aspect of a disaster's effect upon the responding professional. Jeffrey Mitchell (1983) was one of the first to write extensively about the psychological casualties of disasters within rescue service workers. He assisted in the development of what was at that time a relatively new form of crisis intervention, Critical Incident Stress Debriefing (CISD), while serving as a faculty member at the Emergency Health Services Program at the University of Maryland. This intervention, which itself is part of a larger program of intervention named Critical Incident Stress Management (CISM), has been designed for use with a multitude of affected populations, from fire services and police officers, to soldiers returning from combat, and bank tellers after a robbery. It can be understood as a form of crisis group, and progresses through a predictable sequence of events, typically led by a mental health professional such as a psychologist (Wollman, 1993).

The Critical Incident Stress Debriefing model has also
been used as a preventative mental health intervention in
the aftermath of aviation disasters (Cigrang, Pace, &
Yasuhara, 1995). Studies documenting psychological distress
in rescue workers following aviation disasters (Schooler,
Dougall, & Baum, 1999; and Epstein, Fullerton, & Ursano,
1998) cite one benefit of this approach as providing early
mental health treatment and morbidity prevention. For
example, Epstein, Fullerton, and Ursano (1998) found
through multivariate analysis that the best predictor of
PTSD in their sample of rescue workers was caring for
victims with grotesque burn injuries. Interestingly, an
investigation by Carlier, Lamberts, Van Uchelen, and
Gersons (1998) found that police officers who were
debriefed after a crash in the Netherlands were no less
likely to develop posttraumatic stress symptoms than
officers who did not receive debriefing. Currently, there
is considerable debate within the professional literature
as to whether "CISD" truly is an effective intervention,
and this will be explored in later sections.

One population that is often affected by major trauma
but frequently not the focus of study is the group of
persons providing psychological support, or trauma

counselors. Lesaca (1996) documented the effect of providing counseling to people affected by a major air disaster, and found that those who did so after the crash of USAir Flight 427 in Pittsburgh were more likely to experience symptoms of posttraumatic stress disorder and depression than counselors who provided general counseling services.

A number of air crash survivors were interviewed about the treatment they received from airlines, emergency response personnel, and hospitals to determine if a relationship existed between psychological sequelae following an accident and the survivors' satisfaction with those agencies responding to the disaster (Coarsey-Rader, 1994). The author, using the Diagnostic Interview Schedule/ Disaster Supplement as the assessment instrument, found that survivors' perception of airline response significantly predicted the diagnosis of PTSD, in that the variance of the disorder was primarily explained by the ratings attributed to the airline. When one considers that it is the airline which sees survivors and family members for the longest period of time after an accident, it may seem appropriate for the airline to establish the best standard of care, including psychological, after an

accident occurs. One author (Anderson, 1988) describes the involvement of the psychological and psychiatric community as "vital" to the success of a crisis intervention program.

Every year, the National Air Disaster Alliance and Foundation (NADA/F), a nonprofit group, which advocates for air safety legislation and more resources for the support of air disaster survivors and victims' families, holds its annual meeting in Washington, D.C. Meeting attendees are comprised of these individuals, as well as professionals whose work brings them into contact with the aviation industry, including the fields of journalism, engineering, psychology, medicine, and even pilots themselves. These meetings are a forum for discussions on the progress of the organization and include speakers from the U.S. aviation-regulating bodies, the Federal Aviation Administration (FAA), and National Transportation Safety Board (NTSB).

In addition to this work, NADA/F has also brought into existence the Family Support Team. This is a group of volunteers who, because of their prior experiences interacting with the myriad agencies responding to an air disaster, are willing to donate their time and knowledge to family members who may be overwhelmed with the enormity of having just lost a loved one and left confused about how to

interact with authorities or even maintaining adequate self-care in the face of crisis.

During informal conversations with a number of this organization's members, it became evident to this author that many were very dissatisfied with how they were treated by mental health professionals, to the point that some felt they had received more sensitive and empathic treatment from rescue workers, such as emergency medical technicians. It seems important to this author to begin to gain a fuller perspective of this sentiment, using a more systematic method of observation than that noted above. That our profession may be perceived as insensitive during a time in which it is intended to be supportive and helpful is of significant concern to this author, as it would not only blacken the image the public has of our profession, but it would prevent people in distress from receiving the quality of care our profession is highly trained and competent to provide.

After discussions with the president of NADA/F, the author distributed an anonymous and voluntary survey to those attending the 2002 annual meeting. The goal of this survey was to collect raw data from those most directly affected by air disasters in an effort to assess their

perceptions regarding the aforementioned quality and access issues of psychological services. This survey sought information about the respondents' interactions with mental health professionals, and enabled the responses to be categorized by date. It also distinguished between those who lost a loved one or family member in a crash and those who survived a crash, which may be important in assessing outcomes. Thus, it would be possible to view the progression (or stability or deterioration) of perceived quality of and access to services over time. If this data were properly organized and presented, it would allow the recipients of these mental health services an opportunity to provide their reactions to clinical practice. In theory, this information could then influence how professionals provide service before the next tragedy occurs. The appropriate time in which to refine such methods is not in the midst of calamity.

The field of clinical psychology has much to offer in the assessment and treatment of debilitating posttraumatic stress symptoms. Mental health professionals have been successful in working with many different types of traumas, and there would be no reason to think that this population should fare any worse as a result of interacting with them.

A number of aircraft accident survivors and family members of those who perished in air disasters have received the services of those functioning in trauma and bereavement counseling capacities. It is incumbent upon our profession to evaluate the efficacy of our interventions with traumatized populations in order to minimize or eliminate the potential of causing additional trauma. This dissertation seeks to accomplish a greater understanding of this type of trauma and a more thorough elucidation of the most efficacious approaches to its treatment.

II. Literature Review

Accident Statistics & Trends

In order to appreciate the scale of trauma that is created by air disasters, a review of these events is in order. This would include a focus on accident trends and rates currently realized by the civil aviation industry.

This industry, which has witnessed the stabilization of the accident rate and subsequent increase in accident number as the world fleet grows (Howard, 2000), has exerted great effort in pursuing a zero-accident rate. Worldwide, the accident rate for commercial aviation hovers at less than five hull (airplane body) losses per million departures (Krause, 1998) or 800,000 flying hours per hull loss (Forward, 2000) and can be as much as ten times that number in developing nations which employ very old aircraft such as the 707 and DC-8 in large quantities (Proctor, 1993). For example, US carriers average 2 million hours between hull losses, while airlines in South America, Asia, and Central Africa average 350,000 flying hours for each lost aircraft. In 1959, when the international aviation industry operated its first full year of operations with

pure—jet aircraft, there was a world average of 100,000 flying hours between airliner crashes (Forward, 2000).

The probability of a *fatal* accident now rests at one per 1.5-2 million departures (Weir, 1999). The Boeing Company, one of the world's manufacturers of civil aircraft, has indicated that a major commercial aircraft disaster could occur on a weekly basis by the year 2010, unless the industry is successful in further reducing the accident rate (Krause, 1998). Given air travel's present 7% annual growth, this translates into twice as many passengers being killed in 2010 than is currently the case, even if the accident rate stays the same as it is today. Air travel would need to become roughly three times safer than it is today in order to maintain the present number of passengers killed (Weir, 1999).

Future growth in airline travel may also be explained by the phenomenon known as fragmentation. This is defined as more frequent nonstop flights to new and already existing city pairs (Boeing Commercial Airplanes Group, 2000). Fragmentation is illustrated by the expansion in service across the North Atlantic that occurred after U.S. airline deregulation. In 2000, for example, there were 22 daily flights serving 11 European destinations from

Chicago's O'Hare International Airport, whereas there was only one daily flight to London from Chicago before deregulation. Boeing (2000) estimates that by the year 2019, there will be an additional 190 nonstop routes across the North Atlantic, and forecasts that fragmentation will dramatically increase air travel in the North Pacific (and, to a lesser extent, Europe-Asia) market as well.

It is forecasted that in 2010, the airspace over the United States will become so overburdened by this increase in capacity that it would result in unacceptable delays to those who depend on air travel (Donohue, 2000). As the national economy is strongly linked to air commerce, obstacles to the growth of U.S. air travel could result in significant consequences, not the least of which would be to the aviation industry itself. Major growth in commercial airline traffic occurred after the deregulation of this industry in 1978 (Anderson, 1988), which, it was presumed, would lead to healthy competition among air carriers, with the benefits of cheaper air travel being realized by the public. This has been partly responsible for the growth in air travel to which the air traffic control system is having difficulty adjusting.

As this industry prepares to celebrate its 100th birthday, it can look back upon a host of achievements which have certainly improved the safety of travel by air. Among these achievements are the introduction of Ground Proximity Warning System (GPWS) units that alert flight crews when the rate of closure between an aircraft and terrain becomes too great, or when the aircraft is improperly configured for the mode of flight it is in (Proctor, 1993). This alone has been very beneficial in reducing the number of "Controlled Flight Into Terrain (CFIT)" accidents, which constitute the overwhelming majority of type of fatal air crashes (Krause, 1998). In fact, CFIT accidents often occur during the approach and landing phases of a flight, which is when more than half of all air accidents occur (Forward, 2000). Essentially, this constitutes flying the aircraft into the ground or mountainous terrain in conditions of poor weather and visibility. Also, the advent of Flight Data Recorders and Cockpit Voice Recorders (informally known as the "black boxes") which all commercial airliners must carry, have allowed accident investigators to isolate causal factors of crashes. This can result in improved training methods for

new hire pilots and increased knowledge of the flight environment (Proctor, 1993).

The area of human factors as it relates to the safe pilotage of aircraft has been thoroughly studied in an attempt to understand the interface between machines and their human operators. Donohue (2000) has stated that "Human factors have been the most significant element in both commercial and private aviation safety for almost a half-century" (p.31). The study of human factors in aviation, which includes but is not limited to issues of communication, perception, decision-making, information-processing, and the effects of fatigue and stress, has had a significant impact upon the safety of commercial aviation (Beaty, 1995). This is where the bulk of current accident prevention research is taking place, given that about 70% of aircraft accidents are attributable to pilot error. This term refers to the action(s) or inaction(s) of the flight crew which lead to air disasters. Defined succinctly, the focus of the study of human factors is to "...achieve a broad understanding of pilot behavior through the study of specific human abilities and limitations critical to flight operations" (O'Hare & Roscoe, 1990, p. viii). Advances in technology have produced aircraft which are very efficient

at flying themselves and experience very few mechanical breakdowns, and flight crews have largely been relegated to the role of system monitors. What has happened is that as this technology is introduced to the aviation industry, the area to which technology is applied is (theoretically) eliminated as a potential cause of a crash. This further exposes the role played by the human operator (Weir, 1999).

Yet, a look at the last twenty years of statistics on fatalities for U.S. air carriers reveals a different image than the one painted by the promises of new aviation technologies. Beginning in 1982, when the National Transportation Safety Board revised the method by which it analyzes its accident statistics, there were 1.4 million passenger emplanements for each passenger fatality. In 2001, even though nearly twice the number of people boarded U.S. aircraft, the rate had worsened to 1.2 million emplanements for each passenger fatality. The total number of fatalities for 2001 is three less than the total number of lives lost in 1985, the deadliest year of air operations to date (National Transportation Safety Board). The figure for 2001 appears to have been heavily influenced by the hijackings of September 11th of that year, as well as the crash of American Airlines Flight 587 in New York City

shortly thereafter. One year after the September 11th attacks, U.S. air passenger traffic had decreased by an estimated 11%, and a 14% drop in the number of flights by major carriers were observed as well (Incantalupo, 2002). Of course, due to the statistical phenomenon known as regression to the mean, there were years in which no passengers were killed, such as 1993 and 1998, and there were years which fell in between (National Transportation Safety Board, 2002).

There does not appear to be a pattern to the loss of life on passenger aircraft from one year to the next. Aviation Week & Space Technology (1987) hailed 1986 as one of the safest years ever recorded, with no passengers killed while flying on major U.S. scheduled airlines. This followed 1985, when 486 people perished on U.S. air carriers alone, the highest death toll on record. Less than a decade later, the publication asserted that air travel was still the safest mode of transportation, despite the upsurge in fatalities in 1994 (Aviation Week & Space Technology, 1995). It also relayed the aviation industry's message that the public's reaction to the recent rash of air disasters was unwarranted, and that air travelers should avoid those peddling misleading safety statistics in

order to make informed decisions about their travel. Just
two years later, Aviation Week & Space Technology (1997)
reviewed a report by the National Transportation Safety
Board indicating that the death toll for air passengers for
the year 1996 was second only to the number of passengers
who died on their flights in 1985.

The antiseptic recounting of statistics, however,
devalues the human tragedy and suffering caused by air
disasters. Instead, it serves to focus attention away from
the emotional experience of having survived a nightmarish
situation or the loss of a loved one. This discussion will
now turn to an examination of the literature that is
available documenting these experiences. Those who have
contributed their knowledge include survivors, family
members, those responding to an air disaster in a
professional role, and those who attempt to assist those
professionals.

Characteristics of Air Disasters

An appropriate starting point to this discussion might
include comments made by several authors regarding the
mental health consequences of air disasters, including
research looking into what is known about the needs present

both during and after these tragedies. As stated previously, air disasters are unique in that they occur unpredictably (albeit infrequently) and can cause great loss of life (Jacobs, Quevillon, & Ofman, 1998). It is also true that these events can affect a very large community of people, which may include citizens from more than one nation. Young (as cited in Davis & Stewart, 1999) has referred to communities brought together by tragedy as "communities in transition." Similarly, crashes often find victims far away from their homes and other familiar surroundings, which can drastically alter their available support network. Keeping this characteristic of air disasters in mind, Black (1987) referred to the protected environment of a hotel as the "libinal cocoon." Family members of air crash victims waiting for the victims' bodies to be retrieved and identified were able to receive nurturance and support from a psychiatrist, nurses from the Red Cross, hotel staff, airline representatives, clergy, and perhaps most importantly, each other. The basic yearning for an idealized caretaker, which can be intensified in times of acute stress, can be satisfied by this environment, as well as the safe psychological regression of family members.

Air crashes, much like industrial accidents, can also give rise to significant anger felt by their victims due to the potential for humans having caused the disaster, which may not be the case in weather-related disasters. The sudden and violent nature of an air disaster may leave its victims especially vulnerable to some form of psychological disorder, as immediate and unanticipated death has been documented as more acutely stressful than death that is expected (Williams, Solomon, & Bartone, 1988).

It is important to note, however, that the traditional model of mental illness is not an appropriate vehicle for assisting victims of a disaster, as symptomatic presentations in these individuals are qualitatively different and require the application of specialized techniques for this population, such as crisis intervention (Butcher, 1980). The goals of this approach are symptom relief and stress management skill development, which are more applicable to the transitional nature of stress reactions after a major disaster.

Air disasters, especially large ones, appear to affect several distinct groups of individuals (Williams, Solomon, & Bartone, 1988). These include survivors of the crash, bereaved family and friends of victims, disaster workers,

coordinators and leaders of involved organizations, individuals providing emotional assistance to victims and the bereaved, and airport and airline personnel. These groups can be distinguished by whether they contain direct victims, such as accident survivors, or collateral victims, comprised of individuals who are more distantly related to an air crash but nonetheless are impacted by it. An example of such a group might be family members of mental health counselors providing services to workers tasked with the retrieval of human remains.

However, each of these groups shares a common thread. Being placed at risk for a significant increase in psychiatric morbidity is a potential consequence of involvement in such a tragedy. This consequence can last far beyond the actual disaster due to the qualitative aspects of an air crash.

Crash Survivors

For crash survivors, this morbidity may be manifested by displays of anxiety, depression, anger, hysteria, and guilt. For the bereaved, the expectation of reunions with family and friends can be transformed into shock and disbelief. Airline and airport employees share this sense of shock, as they often view the loss of a flight similar

to the loss of family members (Williams, Solomon, & Bartone, 1988). Surprisingly, one study found that survivors of air disasters actually reported lower levels of emotional distress than air travelers who had not been in an accident (Science Daily, 1999). Fifteen crash survivors and eight travelers who had never been in a crash filled out questionnaires rating their levels of anxiety, depression, and posttraumatic stress. Those survivors who reported perceiving a level of control related to how they responded to their crash did not want or need counseling after the event, and subsequently reported lower amounts of distress in the future. These findings are rare in the field of disaster research, and appear to contradict the prevailing thinking about traumatic stress by stating that experiencing a traumatic event may actually have a positive effect on an individual's life. This appears to share common ground with the perceived benefit phenomenon, where individuals who have survived a traumatic event report benefit and growth as a result of their involvement in the incident (McMillen, Smith, & Fisher 1997).

Disaster Workers

Disaster workers, who are accustomed to exposure to mass casualty incidents, are confronted by scenes of

absolute carnage. Their jobs are complicated by the presence of gruesome sights, smells, and sounds that can leave disturbing impressions. In addition to the stress of recovering badly mutilated and fragmented bodies, these workers may also experience coordination and control problems that may arise from working closely with other departments and agencies whose procedures may be different from their own. Helplessness and depression are often reported by those providing emotional assistance after an aviation disaster. Experiencing the emotional horror of surviving a crash or loss of one's family with the survivors and the bereaved often taxes the personal coping resources of those in a counseling or emotional support role. Also, those in leadership positions within organizations responsible for managing the aftermath of a crash may not seek out or receive emotional support, due to the operational pressures of a post-crash environment. This factor alone may make this group of organizational leaders more vulnerable to the debilitating effects of stress, especially when they are expected to work long hours without adequate rest. The added pressure of having to make critical decisions and coordinate activities while exposed to the same stressors as those they are in charge of can

often overwhelm these individuals, thus making them a high-risk group for developing posttraumatic symptomatology (Williams, Solomon, & Bartone, 1988).

One group of professionals who must carry out their assigned tasks in the midst of a crash site is that of the aviation safety investigators (ASI's) of the Federal Aviation Administration (FAA) and National Transportation Safety Board (NTSB). Their role is that of the crash detective, and one of their duties is to probe the wreckage and its surroundings in search of clues that will help them determine the cause(s) of an air disaster. Often, these investigators must confront not only the death and destruction of the accident scene, but the intense emotion of the bereaved as they interview family and friends of the deceased flight crew members and other personnel as relevant to their work (Coarsey-Rader, 1995). Additionally, these government employees often review the contents of the cockpit voice recorder for clues, which contains the final thirty minutes of conversation and sounds on the flight deck. Often, the distress of the flight crew is clear as they face agonizing situations and experience emotional turmoil, and it is not uncommon for the investigator to hear screams of terror by the pilots in their final seconds.

Aviation safety investigators were at the crash site of USAir Flight 1016 in Charlotte, North Carolina on July 2, 1994. In this event, the McDonnell-Douglas DC-9-32 was preparing to land at Charlotte when it encountered a "microburst," a weather phenomenon typically associated with thunderstorms. A microburst is considered more severe than a downdraft, and usually involves very strong outbursts of winds over a relatively small area (Krause, 1996). Microbursts can literally push an aircraft into the ground, and are usually experienced by flight crews as sudden and large changes in airspeed and vertical speed of the aircraft. These events can be extremely hazardous if not reacted to properly, and have been causal factors in several commercial crashes. The flight crew of Flight 1016 attempted to escape the microburst by applying full power and initiating a right turn, but wind speeds were too extreme. The aircraft stalled and fell to the ground, coming to rest against a home and erupting in flames. Thirty seven of the fifty seven aboard were killed.

Thirteen of the twenty one investigators assigned to USAir Flight 1016 were interviewed over the phone between six and nine months after the crash to examine its effects on their health (Coarsey-Rader, 1995). The Diagnostic

Interview Schedule/Disaster Supplement (DIS/DS) was used to assess the prevalence of symptoms and disorders of distress in these individuals. Although there were no physical problems reported by investigators corresponding with the date of the accident, three of the investigators qualified for a diagnosis of PTSD, although two of them reported these symptoms as a reaction to the investigation of previous air disasters. Also, another one of the ASI's was diagnosed with major depression in response to working at the crash of Flight 1016, and yet another qualified for a diagnosis of phobia. Most of the ASI's reported that the most significantly helpful coping resource to them was family, friends, and peers, and none reported wanting or seeking mental health counseling either at the accident scene or after returning home. However, 15% of those surveyed reported having consulted a mental health professional in the 12 months prior to the interview. The author concludes by stating that the relative novelty of research with this population, in addition to the small sample size of this study, makes it difficult to generalize these findings across the range of professionals who investigate air disasters (Coarsey-Rader, 1995).

Flight Crews

An often unrecognized group of individuals who may
succumb to psychological injuries after an aviation
disaster are flight crews. Frequently viewed by society as
impenetrable fortresses of cool emotion and the very icons
of control (Beaty, 1995), aircrews may suffer from acute
situational anxiety that may occur after an accident,
especially if one results in fatalities. Popplow (1984)
termed this phenomenon "postaccident anxiety syndrome,"
which can involve a significant decrease in self-esteem and
confidence. Like other groups affected by air disasters,
flight crew members can benefit from being encouraged to
discuss their reactions and reassured that feelings of
guilt and anxiety are normal (Popplow, 1984). When 14
commercial pilots in the United Kingdom were referred to a
counseling service after they experienced abnormal flight
events, it was found that some of them voluntarily returned
for additional counseling, and some required
psychopharmacological interventions (Johnston & Kelly,
1988). Thus, a potentially debilitating stress reaction in
crewmembers following a sudden, unanticipated, or extremely
stressful event may be more common than previously
suspected.

With this brief overview of the psychological casualties of aviation disasters in mind, I will introduce the notion of Posttraumatic Stress Disorder and its associated sequelae. Many authors have documented the occurrence of symptoms related to disorders chiefly characterized by the presence of anxiety in persons who were involved in an air disaster. These symptoms can often interfere with many aspects of daily living routines and may be extended in duration, prolonging an individual's anguish. It is important to identify individuals who require treatment (Luu, 2000), as it appears unlikely that the quality of emotional recovery achieved by many victims of aviation disasters can be enhanced without some form of clinical intervention.

Psychological Reactions to Stress

Having been introduced into the official diagnostic classification system used by mental health professionals in 1980, Posttraumatic Stress Disorder had initially been explained using psychodynamic theory (Calhoun & Resick, 1993). Charcot's investigations of hysteria at the end of the nineteenth century represented the first forays into the systematic study of the effects of trauma (Herman,

1997). Despite this, many of the actual prevention and mental health intervention efforts developed in response to the stress of wartime combat (Mangelsdorff, 1985). The history of documentation of combat stress reactions can be traced back to the notion of battle fatigue during the Kumano War in Japan in 603 B.C., in which it was noted that extended campaigns tended to lead to ineffective fighting and low morale. Stress reactions observed during the American Civil War included 5000 hospitalizations for a condition termed "nostalgia," characterized by "mild insanity caused by disappointment and longing for home" (Deutsch, as cited in Mangelsdorff, 1985). With the outbreak of World War I, massive numbers of psychiatric casualties (soldiers who were unable to return to the front lines) were recorded. However, the placement of field hospitals close to the front lines, along with the treatment of casualties as soldiers rather than patients, was very effective in returning many to combat duties. So, by regarding psychological injury as a temporary part of the combat experience and refraining from sending or evacuating the injured away from the fighting, there was a greater chance of returning the soldier to active duty status. Following the war, it was realized that the

intensity, duration, and nature of the combat experienced influences the number of stress reactions (Mangelsdorff, 1985).

Hysteria, which had been considered to be a condition suffered by women for unknown reasons, was not given serious contemplation by physicians (Herman, 1997). As a respected neurologist in the late 1800's, Charcot documented the onset of debilitating symptoms associated with hysterical patients such as motor paralyses, sensory losses, convulsions, and amnesias. His seminal work was influential to both Freud and Janet, and served to inspire them to attempt to discover the causes of hysteria. Separately, they came to the conclusion that hysteria was caused by psychological trauma. The debate which ensued regarding the sexual etiology of hysteria notwithstanding, there was now a link between the exposure to a traumatic stressor and the onset of psychological symptoms, such as dissociation. The person to coin the term "shell shock" was the British psychologist Charles Myers, after his observations of soldiers who were unable to continue in the battle trenches of World War I. To Myers, these veterans seemed to be afflicted with a nervous disorder which was caused by the concussive effects of artillery shells

exploding nearby. In time, these debilitating war neuroses were acknowledged to have psychological origins. By the time the Second World War had ended, it was reported that psychological casualties resulting from sufficient exposure to combat was an inevitable occurrence (Herman, 1997).

In observing the reactions of combat veterans of World War I, Freud recognized the phenomena of repetition and denial (now recognized as the symptoms of re-experiencing and avoidance) in these individuals. These phenomena were incorporated into an understanding of the effects of trauma evidenced by their inclusion into earlier editions of the Diagnostic and Statistical Manual of Mental Disorders, but this remained at the level of neurotic pathology and was given names such as "gross stress reaction" and "transient situational disturbance" (Calhoun & Resick, 1993).

Other theoretical models of PTSD exist. Horowitz has developed an information processing model of trauma, which involves the incorporation of a traumatic event into existing cognitive schemas or the development of new schemas (as cited in Calhoun & Resick, 1993). These cognitions are accomplished by way of oscillations between the individual's attempt to facilitate information processing through intrusive phenomena (such as nightmares

and flashbacks), and cognitive control process aimed at regulating this processing in a manner which will not overwhelm the individual. Until the individual has adjusted to the traumatic event, it remains unassimilated in active memory but outside of conscious awareness, where these memory traces can trigger the phenomenon of reexperiencing.

Likewise, Lang's theory of emotion has also contributed to the information-processing model of PTSD (as cited in Calhoun & Resick, 1993). In this theory, there is an interconnected network of information points where memories are infused with emotion, which includes stimuli relevant to the traumatic event(s), data about the meaning ascribed to the event by the individual, as well as information concerning responses to these events. This inter-connectivity may help to explain the resistance of the meanings of trauma to change. Foa, Steketee, and Rothbaum (as cited in Calhoun & Resick, 1993) expand upon this idea by proposing that these interconnections, which are formed through conditioning and generalization, facilitate the quick activation of large and complex fear networks created by the traumatic event(s). This then permits associations between previously neutral stimuli to become connected with fear. A sense of unpredictability

regarding one's surroundings may then set in, which hastens the development and maintenance of PTSD.

Additionally, there are biological models to explain the presence of Posttraumatic Stress Disorder. Van der Kolk et al. (as cited in Calhoun & Resick, 1993) have posited that the symptoms of PTSD are the result of changes in the central nervous system of the affected individual. In this view, altered neurotransmitter activity can account for the numbing and hyperarousal that is often documented in those who have been exposed to severe trauma. The spike in noradrenalin levels, which occurs as a function of the body's instinct to survive and is initiated by exposure to trauma-relevant stimuli, can produce exaggerated startle responses. Moreover, the subsequent depletion of noradrenalin within the CNS may be responsible for affective numbing and social withdrawal. Finally, the release of endogenous opiates that takes place during reexposure to the traumatic stimuli may produce an analgesic-like effect, which may be a factor in the individual's difficulty in remembering aspects of the initial event. Also, alteration or even damage to neuronal pathways may be caused by the excessive stimulation that

occurs during traumatic events (Kolb [1987] & McGaugh [1990], as cited in Calhoun & Resick, 1993).

Posttraumatic Stress Disorder was given a place as a form of anxiety disorder in the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III; American Psychiatric Association [APA], 1980). Since that time, this syndrome has been widely studied and protocols for its treatment have been established. For example, the severity of a given trauma as well as individual reactions and vulnerabilities to trauma are now accepted to be more important when considering treatment and prognosis than the type of trauma that occurs, although distinctions can be made among them (Calhoun & Resick, 1993).

The Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV; APA, 1994) coverage of PTSD draws upon advances in research which have further elucidated upon the disorder's prevalence, course, etiology, and diagnostic features. Three clusters of symptoms are listed which are necessary to make the diagnosis of PTSD: reexperiencing, avoidance and numbing, and hyperarousal. Reexperiencing phenomena include flashbacks and nightmares about the stressful event, which

can be very frightening to the individual. This may lead to the individual's attempt to control the recalling of distressing imagery and protect themselves against the negative affect and arousal that is associated with it. The individual may undertake a course of avoiding all stimuli associated with the trauma, such as activities, places, or people which are reminders of the event (Calhoun & Resick, 1993).

Also on the continuum of anxiety disorders is Acute Stress Disorder, newly added to the DSM's classification scheme in its fourth edition. This diagnosis, which is similarly applied to intense stress reactions (as is PTSD), embodies the symptoms of exposure to severe trauma that may occur either during or immediately following the traumatic event (Calhoun & Resick, 1994). Acute Stress Disorder can be applied to stress reactions taking place within one month after being exposed to a traumatic stressor and having a minimum of two days to a maximum of four weeks in duration (DSM-IV, APA, 1994). Symptoms of Acute Stress Disorder focus on emotional and dissociative reactions to the event, much like in PTSD, and it is possible that many individuals diagnosed with PTSD may qualify for the

shorter-duration type of stress response syndromes (such as Acute Stress Disorder) as well (Calhoun & Resick, 1993).

Herman (1997, p. 119) speaks about the "spectrum of traumatic disorders," which range from a single event that can overwhelm the individual, to a more complicated form of stress reaction that may be seen in victims of repeated or numerous traumas. She goes further to advocate for the establishment of a new diagnostic classification, to be applied to disorders in those who have suffered from chronic/prolonged trauma, to be called "complex posttraumatic stress disorder." The American Psychiatric Association has decided upon the name "disorder of extreme stress not otherwise specified" for this syndrome's inclusion into the next edition of its diagnostic manual. Recipients of this syndrome might include child sexual abuse victims and survivors of domestic battering, hostages, concentration-camp survivors, and prisoners of war (Herman, 1997, p. 121).

Although it is plausible that a number of psychiatric classifications can be viewed as describing the effects of severe stress, such as phobias, in the case of air disasters, it is also plausible that these disorders may be the aftereffects or by-products of Acute Stress Disorder

and PTSD. One might assume that these two disorders appear in greater frequency and/or command a greater deal of clinical attention in victims of aviation disasters. That is not to say that symptoms of phobias and other syndromes such as Panic Disorder or General Anxiety Disorder are less important; rather, the marked impairment in functioning associated with Acute Stress Disorder and PTSD adds a sense of urgency to the need for intervention in these cases.

The Impact of Disasters

Disasters are not rare events. Between 1967 and 1991, 7,766 disasters were reported worldwide to the Red Cross that killed more than 7 million people and affected nearly 3 trillion (Green & Lindy, 1994). As previously stated, these events can produce significant and lasting impairment in all areas of an individual's life. As the role of the mental health professional includes assisting people in acute distress, these professionals have frequently provided services to populations affected by disaster.

However, little research exists with regard to the evaluation of these interventions. Green and Lindy (1994) have proposed a model of factors that influence outcomes to traumatic events, which begins with being exposed to

specific aspects of the event. Aspects of exposure include violent loss, threat to life, and exposure to grotesque imagery. This is followed by how an individual processes the event, mentally and psychologically. This processing is itself influenced by personal characteristics of the victim as well as characteristics of the recovery environment. For example, an individual's past history of trauma, past psychological problems, and coping and defense styles constitutes what they "bring" to the present trauma. These factors interact with the makeup of the community in which healing would take place, which refers to how that community responds to the present trauma, the strength and availability of social networks, socioeconomic and cultural factors, and so on.

Green and Lindy (1994) also speak of a dose-response relationship between the degree of exposure to trauma and psychological outcomes. Individuals who are confronted with grotesque images of death or injury, death of family members, destruction of their community, and the possibility of their own sudden death have been found to be more likely to develop PTSD and other related symptoms when compared to those who have not experienced these stressors. This is important when mental health professionals attempt

to determine appropriate treatment recipients. Also important is that men and women may not present to health care professionals with similar complaints after a disaster, although they may be about equally at risk for developing posttraumatic symptomatology. Men are more likely to abuse alcohol, become hostile, and endorse physical or somatic complaints, whereas women tend to report more symptoms of anxiety and depression, as well as PTSD.

In an attempt to integrate findings appearing in the literature about stress reactions, McGrath (as cited in Mangelsdorff, 1985) outlined five themes that seemed to emerge. The first deals with how an event is cognitively appraised by an individual; how a situation is perceived may influence the nature of the stress that is felt. Secondly, past exposure/experience with a particular situation or stressor may decrease or moderate the effects of the resulting stress. Third, having a negative experience, such as failure in a situation, is inherently stressful and may lead to a decrease in performance. However, previous successes can moderate the stress of the negative experience. The fourth theme extracted concerns the relationship between the stimulation created by the

environment and the performance of the individual, known as the Yerkes-Dodson Law. This law states that an optimal level of performance results from a moderate amount of arousal, and that too much or too little arousal can inhibit performance. Lastly, the effects of some physical threats can be attenuated by the quality of an individual's social interactions. That is, the effects of some stressors can be buffered by the presence of others, especially when preexisting relationships are viewed as having a positive quality (McGrath, as cited in Mangelsdorff, 1985).

The effects of disasters on communities of people has been described for hundreds, if not thousands of years (Mangelsdorff, 1985). The reactions of people caught in the eruption of Mt. Vesuvius in 79 A.D., the Athens plague in 430 B.C., and the fires and plagues in London in the 1660's included behaviors such as flight, disruption, confusion, and demoralization. Moreover, significant changes in European culture were noted to have occurred in reaction to the Black Death of the 1300's, involving feelings of misery, depression, anxiety, and impending doom. More recently, systematic research on human responses to disaster was formally undertaken by the United States in 1950 (Mangelsdorff, 1985). This was carried out by the

National Opinion Research Center at the University of

Chicago, the Operations Research Office at Johns Hopkins

University, and the University of Oklahoma. Between 1952

and 1957, the Committee on Disaster Studies operated on

appointment by the National Academy of Sciences-National

Research Council. The committee then changed its name to

the Disaster Research Group, and its findings represented a

shift away from the traditional focus on the physical and

economic consequences of disaster by examining human

behaviors under stress.

A meta-analysis on studies of survivors of disasters

conducted by Keenan (1999) revealed that due to the

delayed-onset nature of severe stress reactions, the time

of assessment can be a significant intervening variable in

research outcomes with this population. The pathogenic

influence of the presence of fatalities may be

significantly lessened by the passage of time. That is, by

the time symptoms of posttraumatic stress disorder

typically emerge, the impact of violent death that was

witnessed may not be so severe that it would be a primary

contributor to PTSD. Additionally, the intensity and

pervasiveness of psychological distress in disaster victims

can be influenced by the type of disaster that occurred, such as natural versus man-made.

Emotional Sequelae of Disasters

The relationship between disasters and posttraumatic stress has been elucidated across a wide range of events. For example, 40 bereaved individuals were interviewed in response to the 1995 terrorist bombing of the Alfred P. Murrah Federal Building in Oklahoma City (Pfefferbaum et al., 2001). They responded to items concerning demographic information, exposure to the incident, injury, retrospective report of initial emotional and physiological reaction, and current posttraumatic stress symptoms, grief, safety concerns, and functioning. The authors found that there was a strong association between the symptoms of posttraumatic stress and grief, and that at higher levels of this stress, there was a stronger relationship between grief and difficulty functioning.

Mental health interventions with some of those directly and indirectly affected by the bombing were described by Tucker, Pfefferbaum, Nixon, and Foy (1999). Some of the survivors who sought out mental health treatment were observed to be displaying severe stress

reactions (including anxiety, major depression, substance abuse, suicidal ideation, and auditory hallucinations), which required psychotherapeutic and pharmacologic approaches for symptoms to abate. Similarly, persons distressed from physical or emotional exposure to the blast were able to obtain mental health intervention from Project Heartland, administered by Oklahoma's Department of Mental Health and Substance Abuse Services. Some 9,000 people elected to make use of these services for two years following the event, which included crisis intervention, support groups, outreach, consultation, and referral to mental health professionals. Also, rescue workers and body handlers rendered descriptions of distressing trauma reminders when surveyed two years after the bombing. This in part indicated that some of the workers carried out their tasks in the midst of remains of persons that were once known to them, some of these remains being in a dismembered and decaying state. Fourteen percent of those surveyed sought mental health treatment.

Conceptualizing the bombing as a community disaster, Tucker, Pfefferbaum, Nixon, and Foy (1999) explain the impact of this trauma across individuals who have suffered from varying degrees of exposure to it using a model

originally developed by Wright, Ursano, Bartone, and Ingraham (1990). For example, a series of concentric circles can be used to understand how greatly affected different groups of individuals might be, with the assumption that those in the innermost, smallest circle being the most directly impacted. For the Oklahoma City bombing, this group would of course include those significantly injured by the blast and those grieving the loss of close family members and friends. Those exposed to the blast and subsequent destruction but were not injured, rescue workers, mental health professionals who attended to this event, the bereaved of extended family and acquaintances, the media, and business people would all occupy the successively larger circles in this model. The center point would thus be reserved for the community members, federal workers, and children who were killed in the blast.

When fire erupted at the Beverly Hills Supper Club in Southgate, Kentucky in 1977, the more than 2500 patrons inside began an orderly evacuation until thick smoke filled its rooms (Lindy, Grace, & Green, 1981). The smoke, in combination with false and overloaded exits (due to panicking customers jamming the doorways), eroded many

people's chances for escape. One hundred and sixty five people were killed. Leaders of the mental health team and clergy who responded to the initial needs of this disaster discovered that a more long-term intervention/resource would be needed in the days, weeks, and possibly months following the fire to address the long-term emotional consequences that were sure to follow. The Fire Aftermath Center was established, which offered community members consultation, education, treatment, and research.

The outreach component of this center was reported on by Lindy, Grace, and Green (1981). Several groups that were thought to be at risk from the fire were targeted by the aftermath center. These included patrons and employees not injured in the fire, those who were hospitalized, bereaved family and friends, and rescue workers. It was hypothesized that three steps are required for effective outreach to take place: identification of people/groups at risk for developing stress reactions (as indicated by the groups identified above), the availability of mental health resources must be communicated successfully to survivors, and survivors must be willing to follow through in accepting treatment interventions. In this study, four methods for reaching out to the identified groups were

used: media outlets, community case finding (where leaders in preexisting community support systems were contacted to refer appropriate survivors to the aftermath center), special groups such as family members who identified bodies at the morgue, and direct phone contact.

Lindy et al. (1981) also labeled the concept of the trauma membrane, which refers to the network of trusted people in a victim's environment that serves to buffer the victim against additional external stress. The authors also make the distinction between centrifugal and centripetal disasters. Centrifugal disasters, which include examples such as the fire described above and air disasters, involve the destruction of a specific space or vehicle and victims who neither live nor work in the devastated area. Centripetal disasters on the other hand involve the destruction of very large areas and death of those who lived or worked in the affected area. Examples of this type would include floods, tornadoes, hurricanes, and earthquakes. Here, support networks are part of the affected communities, and may be more effective in facilitating the healing process.

Psychological and behavioral responses to the 6.7 Northridge earthquake on January 17, 1994, were assessed

using the Impact of Event Scale and other data (Hillig, 2000). Results from the sample of 434 students at the University of California indicated that 81% of respondents experienced symptoms of traumatic stress three weeks after the earthquake, with greater symptoms endorsed by women and individuals with greater injury and damage. Direct exposure to both the initial disaster and its aftermath was found to be associated with higher levels of intrusive and total traumatic stress symptoms than secondary exposure, encompassing individuals who returned to the Los Angeles area within days of the earthquake.

A Danish supertanker that was under construction exploded later that same year, subjecting workers in the area to violent and sudden destruction (Elklit, 1997). High exposure to this industrial disaster was found to be strongly correlated with emotion-focused and social coping strategies, as well as rates of survivor's guilt when survivors were assessed 6.5 months after the event. Further, distress and certain coping strategies were found to be associated with self-reported recent life events and former experience with work-related disasters. Survivors of the explosion were also found to utilize primary coping

strategies such as reengaging with their jobs and affiliating with coworkers.

The previously mentioned phenomenon of perceived benefit can also play a part in non-aviation related disasters. In fact, when compared with surveyed survivors of an F4 tornado and a separate mass-murder episode, survivors of an air disaster reported the lowest rates of perceived benefit (McMillen, Smith, & Fisher, 1997). These differences are explained by taking into account the size of the communities where the disaster occurred (small town versus large city), the corporate response to these disasters (positive versus negative or no response from employer), and the type of support needed after the disasters (housing and food versus emotional support). Again, this concept involves effectively coping with the effects of a negative event, which may be associated with positive adjustment to life after such an event. Potential benefit after trauma may include both perceived changes in the self and perceived changes in relationships with others.

Other Transportation Disasters

In addition to the aviation arena, other types of transportation disasters have been documented in the literature and can provide additional insight into the nature of trauma and the recovery process. For example, between 1970 and 1978, there were more than 20 serious train accidents which claimed the lives of 70 and injured 396. For the survivors of these disasters, the two main psychological stressors appear to be the stress of physical injury and personal loss (Lundin, 1995). When a commuter train derailment caused the deaths of 83 passengers in Australia in 1977, survivors and the bereaved received a multitude of mental health interventions. The amount and nature of the distress they were suffering appeared to be quite similar to that which had been noted after air disasters. A preventative psychiatry outreach program was instituted in which bereavement counseling was offered to family members who might be at risk for developing stress reactions. Additionally, the rescue workers who responded to this accident were interviewed to assess their emotional reactivity to it. 77 of the 95 surveyed reported stress reactions, including feelings of helplessness caused by the magnitude of the destruction, reactions to the sight and

smell of mutilated bodies, reactions to the anguish of the bereaved, and the need to work under pressure.

The collision of three rush hour commuter trains in south London on December 12, 1988 took the lives of 35 people and injured scores of passengers. The well-being of a group of survivors was compared with a control group of commuters by filling out the Impact of Event Scale (Selley et al., 1997). The survivors reported higher levels of intrusion and avoidance symptoms, especially with respect to severity of injury; 30% of those moderately or severely injured reported high levels of these symptoms.

The human responses to maritime disasters have been studied as well. In March 1987, the car ferry "Herald of Free Enterprise" capsized after her bow doors were left open and the sea poured in, killing 188 passengers (Lundin, 1995). It was the worst maritime passenger accident reported for the United Kingdom since the loss of the Titanic in 1912. Sixty one percent of survivors surveyed reported experiencing "survivor's guilt", or feeling guilty of surviving when so many perished in the disaster. The General Health Questionnaire and the Impact of Event Scale were used to assess symptoms of distress. Significant amounts of distress were found to be associated with

increased abuse of substances, including alcohol, cigarettes, sleeping tablets, antidepressants, and tranquilizers. Additionally, elevated scores on the Beck Depression Inventory and Spielberger State Anxiety Inventory revealed greater intrusive reexperiencing via increased self-reported depression, as well as anxiety.

When the cruise ship "Jupiter" collided with an oil tanker in the Mediterranean Sea on October 21, 1988, 334 of over 400 children aboard survived its sinking (Lundin, 1995). These children were followed up 5-9 months after the disaster via a number of questionnaires and compared with control groups. Significantly higher scores for depression and anxiety were reported by these respondents, as well as more fears of stimuli related to the trauma. Additionally, nearly half of the surviving children were found to meet the criteria for PTSD as measured by the Impact of Event Scale, and overall their scores were as high as those reported by adults in other disasters. It was also revealed that the amount of crisis support provided to these children mediated the amount of posttraumatic stress reported at a later time. Five to eight years after the disaster, another study looking into the risk factors for the development of PTSD in the group of child survivors

found that the duration and severity of this clinical syndrome were best predicted by the earlier presence of social, physical, and psychological difficulties in combination with ratings of depression obtained 5 months after the sinking (Udwin, Boyle, Yule, Bolton, & O'Ryan, 2000).

For adult survivors of the Jupiter disaster, little evidence of severe and chronic symptomatology was found 18 months afterwards (Joseph, Yule, Williams, & Andrews, 1993). However, the importance of crisis support in the immediate aftermath of this event was emphasized by less avoidance of event-related stimuli being reported by this group of survivors. In addition, self reported intrusive symptoms were also shown to decrease over time, which may also be explained by the presence of support from family and friends.

Long-term psychological effects of the Alexander L. Kielland oil-rig disaster on March 27, 1980 were evaluated through interviews of both survivors and rescuers (Lundin, 1995). Mental health outcomes in survivors were found to be determined by exposure to the disaster, as well as social support, personality, and alcohol use. In this incident, one of the leg supports of the oil-rig platform collapsed,

causing the platform to capsize into the North Sea and take the lives of 123 of the 212 workers. Occupational dysfunction in these survivors was found to be significantly predicted by the frequency of posttraumatic nightmares reported by them in response to the event. When rescuers who responded to the Kielland oil-rig disaster completed self-report questionnaires asking them about the experience, 24% reported their mental health to be poor nine months after the disaster.

Air Disasters & the Mental Health Professions

Some authors have documented case studies of working with victims of a specific air disaster. These studies report on a range of observations, from coping skills of survivors both pre- and post-impact, to the efficacy of psychopharmacological interventions with this population, to the development of posttraumatic stress symptoms, and to the implementation of crisis intervention techniques. These authors' work shows how the field of mental health has historically interacted with survivors, friends and family members of victims, and others in providing professional services. This will lay the foundation for a discussion of proposals of the components of a clinical intervention plan

for air disasters that may be most effective in reducing emotional distress, and assisting individuals (and communities) in adapting to a changed life. The subject of "Critical Incident Stress Debriefing", as well as how it has been utilized in the aftermath of aviation disasters, will be described separately in a later section.

On a trans-Atlantic flight in 1983, passengers learned that their trip was being interrupted by a fire on board the aircraft which necessitated an immediate emergency descent and landing in Labrador (Goetestam, Goetestam, & Melin, 1983). Passengers were initially told, however, that the captain intended to make a water landing, or "ditching", near the spot where the Titanic had disappeared. Also, the in-flight movies consisted of a film depicting a plane crash in one section of the aircraft and a film about the Titanic in another section. The authors, who were psychologists on board the flight, were traveling to a psychology conference at the flight's destination of New York City. They decided to survey and document passenger behavior after the aircraft had landed in order to better understand the effects of extreme stress on coping responses. A random sampling of passengers led to their being asked about the types of coping responses they

employed during the in-flight emergency. They were also asked to rate their subjective levels of anxiety over time from announcement of the fire over the public-address system to the point at which the successful landing was executed. Passengers reported the greatest amount of distress when they were given information on the fire that was occurring, which gradually decreased until the landing took place less than an hour later. Coping strategies used by passengers were classified into cognitive (reassuring self-talk, forming strategies for evacuation, praying), behavioral (preparing for landing, assisting others, holding the hands of fellow passengers), and drug responses (smoking numerous cigarettes). Investigators discovered that cognitive and behavioral responses contributed to a much greater anxiety reduction than the drug response, smoking, when the act of smoking was the exclusive strategy used. Combinations of strategies were seen as more effective overall (Gotestam, Gotestam, & Melin, 1983).

There are other descriptions of air passenger behaviors during emergency situations. Johnson (1997) outlines four common responses to severe physical threat seen in both animals and humans. The first response is to combat the threat, or taking direct preventative action to

prevent it from causing harm. A second way of responding is by way of "normal flight," in which the organism attempts to evade the threat in a measured and rational fashion.

Another potential behavior is "panic flight," in which conventional social bonds, such as between close family members, cease to exist as the attempt to escape is made, and the individual engages in low level behavior where alternative solutions to the threat are not explored. Finally, there is "behavioral inaction," when the individual does little or nothing to escape the threatening situation. Behavioral inaction is commonly observed in animals when attempting to avoid further harm by a predator; they "play dead" in the hopes that the threatening situation will pass. These behaviors may occur in any sequence, but usually in response to how dangerous the situation is perceived to be by the individual. In fact, it has been found that the type of threat, the situation, the training the individual has had to deal effectively with the threat, and leadership provided to them are all factors which may determine which course of action will be taken (Johnson, 1997).

Interviews with survivors of air disasters have documented behaviors such as panic flight and behavioral

inaction both during and after a crash. For example, immediately after the runway collision of two Boeing 747's on the island of Tenerife in 1977, which remains the worst aviation disaster in history, a female passenger remained in her seat until prompted by her husband to evacuate the burning aircraft with him. Another passenger also reported similar inactivity after the impact, doing nothing for several moments before commanding herself to exit the plane. These interviewees indicated that many of the passengers seemed to be displaying behavioral inaction, and many more lives might have been saved if they were able to be pulled out of this state of being. (Johnson, 1997).

David Koch, a passenger aboard USAir Flight 1493, reported several of these behaviors. His airliner, a Boeing 737-300, landed on top of a smaller commuter aircraft that was preparing to take off at Los Angeles in 1991. After the initial impact, both planes slid across a field and into a building before bursting into flames. Initially, this man exhibited normal flight behavior by looking for his shoes and jacket for protection from the fire and smoke. As he proceeded to the exits, he noticed other passengers clogging the doorways in a frantic attempt to abandon the inferno without regard to one another, thereby displaying

panic flight. Seeing this and feeling helpless to save himself, he then reported an absence of panic and terror as he walked back to the first class section and stood there alone for several moments, contemplating his imminent demise. It was only after he realized there might be a hole in the side of the plane that he began to make attempts to get out of the wreckage (Johnson, 1997). One must keep in mind, however, that passenger accounts of the events of a crash may be highly variable due to the sensorial overload created by the stress of the threat, which can tax an individual's information-processing capability in an emergency (Dodge, 1983). This was discovered when the National Transportation Safety Board interviewed survivors of the Tenerife accident described previously, where passenger statements were compared with known facts of the crash as well as statements of other passengers.

Documentation of the psychological reactions caused by the crash of Pacific Southwest Airlines flight 182 in September 1978 was among the first seen in the literature. Shuchter & Zisook (1984) reported on the reactions of six individuals, some of whom witnessed the Boeing 727-214, trailing flames from its right wing, plunge into a residential neighborhood outside San Diego after its

collision with a small private plane. There were no survivors from either aircraft, resulting in 145 deaths, including some on the ground. Immediately after the crash, the San Diego County Mental Health Service issued a joint media statement with the UCSD Medical School's Department of Psychiatry that served to educate the public about reactions likely to occur after such a disaster. Their statement also invited people to seek out the available mental health resources (which were being provided free of charge) in the community. Also, specific outreach interventions were targeted to high-risk groups that had been previously identified. These groups included residents of the area in which the aircraft crashed, employees of the affected airline, family members of those on board the aircraft, emergency response personnel, and San Diego citizens who might have been in distress because of the tragedy. The individuals who were interviewed endorsed a variety of symptoms. Some were the psychophysiological concomitants of stress, such as headaches, sleep disturbances, hyperventilation, gastrointestinal disturbances, and nightmares. Other symptoms included signs of depression, phobias, emotional dyscontrol, obsessions, and psychotic manifestations. Some individuals, who had

experienced trauma earlier in their lives, found their reactions to these earlier events reemerging after the crash of Flight 182. The authors note the apparent helpfulness of brief crisis intervention techniques, such as empathetic listening and facilitating emotional expression, in assisting these people (Shuchter & Zisook, 1984).

In a similar vein, Davis & Stewart (1999) indicated that many of those who responded to this crash site in a professional role, such as public safety and rescue officials, developed a number of emotional or behavioral symptoms which complicated their return to work and family life. Symptoms reported by these workers included depression, anger, loss of appetite, anhedonia, inability to sleep, confusion, difficulties with concentration, substance abuse, phobias, and gastritis. According to a police officer who responded to the scene of this disaster, "it was like stepping suddenly into hell…we were standing in a pile of human tissue mixed with tiny pieces of airplane" (Davidson, as cited in Davis & Stewart, 1999). Among the proposed interventions to alleviate this suffering were community outreach efforts to mitigate symptoms that were part of acute stress reactions and a

provider referral network to ensure ongoing care and support for all affected persons (Davis & Stewart, 1999).

Hospitalized survivors of a plane crash which took the lives of 23 French tourists were monitored for signs of posttraumatic stress, acute stress response, and depression for one month after the accident (Birmes, Arrieu, Payen, Warner, & Schmitt, 1999; Birmes, Ducasse, Warner, Payen, & Schmitt, 2000). Each week, these survivors were assessed for these syndromes using DSM-IV criteria, and they completed the French-translated and validated version of the Impact of Event scale on the last day of the month. The investigators found a significant relationship between the presence of earlier trauma in the survivors' lives and the presence of Posttraumatic Stress Disorder that resulted from the air disaster. Of additional interest is that a significant level of depression was found to be associated with some of the individuals who developed PTSD. These authors interpreted this finding by indicating that victims of trauma who have already experienced some other trauma at an earlier point in their lives appear to be more susceptible to developing PTSD associated with depression. They further state that the frequency of comorbidity of

these disorders after a traumatic event rises beyond what would normally be expected due to mere coincidence.

Lukasik (1991), in surveying the incidence rate of Posttraumatic Stress Disorder in survivors of Canadian commercial airline disasters, found that there was an overall rate of 14.5%, with the rate of the passengers as a separate group being 23.2%. Other groups examined included males, with a rate of 13.1%, females with a rate of 32%, and pilots as their own group with 12.3%. These rates were determined using an instrument called the Impact of Event Scale and according to the American Psychiatric Association's definition of PTSD. This research confirms that theory and research on PTSD with other populations can also be applied to victims of air disasters.

High levels of intrusive and avoidant symptoms were reported by members of a U.S. Air Force community after eight persons from their community were killed in an air crash (Fullerton, Ursano, Kao, & Bharitya, 1999). In addition, higher levels of depressive symptoms were reported when this group was compared with a control group. The authors, who were investigating patterns of both acute and subsequent bereavement (at one week and 2 months post-disaster, respectively), determined that closer ties to the

community predicted these higher levels of traumatic stress in these individuals. Further, they found that at two months after the crash, the most robust predictors of depression were being single, low psychological hardiness, and low perceived support from friends.

Other studies have looked at the impact of air disasters on communities as well, though they have focused on the physical attributes of what constitutes a community, such as a housing development. One example of this would include the aforementioned crash of PSA Flight 182. Another example would involve the crash of a Boeing 737-2D6C near the town of Coventry, in the United Kingdom in December 1994 (Cheung Chung, Easthope, Eaton, & McHugh, 1999). After its wing clipped a utility pole, the aircraft rolled out of control until nearly inverted before crashing into a wooded area adjacent to the Willenhall housing estates. Eighty-two of its residents, some of whom were home at the time of the crash, were interviewed regarding their subjective levels of distress and were asked to fill out the Impact of Event Scale (IES) and General Health Questionnaire (GHQ). Respondents were divided into two groups; one group was comprised of residents who experienced the crash directly because they were at home, and the other was comprised of

residents who were away from home at the time and so were primarily impacted by learning of the crash from others, making them indirectly exposed to the trauma. Some of the primary immediate reactions reported by respondents included feeling scared, frightened, horrified, or shocked, and these were endorsed to a greater extent by the direct exposure group. To a lesser extent, they also reported shaking, feeling extremely nervous or anxious, or physically ill. Interestingly, 73% of the direct exposure residents stated the expectation that there would be an air crash one day, while 45% of the indirect exposure residents expected an air crash to occur at some point. Similarly, some of those who were directly exposed to the disaster received counseling and medication interventions, but none of those in the indirect exposure group received any professional help. This is thought to further confirm the contention that one's proximity to a traumatic stressor increases the likelihood of psychiatric morbidity, such as symptoms of intrusive recollections/imagery and avoidance behaviors (Cheung Chung, Easthope, Eaton, & McHugh, 1999).

Increasingly, the victims of air disasters are becoming litigants, and the need for effective assessment of survivors claiming compensation for psychiatric sequelae

has been strongly endorsed (Scott, Brooks, & McKinlay, 1995). Such was the case when residents of the town of Lockerbie, Scotland filed claims against the insurers of Pan American Airways after the destruction of Flight 103 by a terrorist's bomb in 1988. The detonation of Semtex, a plastic explosive, in the cargo hold of the 747 caused the immediate disintegration of Flight 103 and its occupants high above Lockerbie. Hulks of flaming debris and jet fuel fell into and around the town, claiming additional lives on the ground. Brooks & McKinlay (1992) were referred a number of Lockerbie residents suing the airline for medico-legal examination, which took place roughly a year after the crash. In an effort to investigate the longitudinal course of psychiatric morbidity resulting from this disaster, Scott, Brooks, and McKinlay (1995), reassessed a number of these citizens about 36 months after the disaster, 23 months after the initial interview. By this point, claims against the airline had been settled. Seventy-two percent of the sample was diagnosed with PTSD during the first interview; this figure dropped to 48% at the 3 year follow-up. The percentage of cases of depression increased from 28% at first examination to 36% after three years. Also, Panic Disorder (with and without agoraphobia) and

Generalized Anxiety Disorder were diagnosed in some individuals during the second interview. Scott et al. discuss how the relatively high frequency of posttraumatic symptomatology may be explained by the community divisiveness that existed over the issue of compensation, which may in turn have complicated the recovery process for affected individuals. The previously mentioned finding regarding the comorbidity of depression and PTSD was repeated in this study, in which 66% of the cases diagnosed with PTSD during reassessment also had a diagnosis of depression.

On October 4, 1992, El Al Cargo Flight 1862, a Boeing 747-258F(SCD), had just taken off from Amsterdam's Schipol Airport when the pylon connecting the number three engine to the wing failed. The engine separated from the aircraft and slammed into the number four engine, causing it to fall away as well. With power only on the left side of the aircraft, it was barely controllable. The flight crew issued a mayday call and attempted to ease the stricken jetliner back to Schipol for an emergency landing. However, because of damage to crucial hydraulic and pneumatic systems caused by the double engine separation, the crew could not stabilize the aircraft's flight. Flight 1862

ended when, in a spiraling dive and with its wings almost in the vertical, it impacted the 11-story apartment buildings in a district of Amsterdam known as Bijlmermeer. The ensuing disaster claimed the lives of the four flight crew as well as 43 on the ground (Marriott, 1999). Even though Flight 1862 carried only freight, it has been estimated that the total number of those who experienced the crash and its effects was between 1000-1500 people (Gersons & Carlier, 1993). Posttraumatic stress reactions were recorded in this population, and psychological crisis intervention techniques were used to relieve these symptoms. Here, the attention of mental health pro-fessionals was directed toward education and consultation activities instead of towards direct care and treatment, and already existing community networks were utilized in organizing assistance efforts, rather than forcing new social structures upon a devastated community. One study involving this disaster (Partial Posttraumatic Stress Disorder, 1995) investigated the occurrence of partial presentations of Posttraumatic Stress Disorder, which was defined when interviewed subjects did not meet criteria for all three of the required symptom clusters as described by the third revision of the Diagnostic and Statistical

Manual. While this type of presentation may not rise to the level of a diagnosable syndrome, those so affected presumably may require the same level of attention as those suffering from full-blown cases. In the El Al Cargo crash, 26% of respondents (N=136) qualified for a diagnosis of PTSD, while 44% exhibited partial PTSD. Subclinical levels of PTSD may be important in evaluating the need for services, in that it may represent a significant need that is not often acknowledged by the mental health community.

Employees of the Ramada Hotel in Indianapolis were caught by surprise when a U.S. Air Force A-7 Corsair jet fighter lost engine power and crashed into the lobby in 1987. Nine employees were killed immediately, and a chaotic scene developed outside as crowds of media and onlookers frustrated attempts of rescue workers to reach the site, which was heavily damaged and in flames. Survivors reported feelings of horror as they listened to the screams of their coworkers dying inside and watching a man running from the building engulfed by fire (Smith, North, McCool, & Shea, 1990). Forty-six of these survivors were later interviewed using the Diagnostic Interview Schedule/Disaster Supplement (DIS/DS) to examine the relation between degree of exposure to the traumatic event and development of psycho-

pathological symptoms. It was found that the subjective reports of terror/horror by the victims did not correlate with actual psychiatric diagnoses, although more than half of those interviewed did meet criteria for psychiatric disorders. Seventy-two percent of these subjects reported histories of psychiatric disorder that were present before the crash. It is of the opinion of this study that preexisting psychiatric disorder is a strong predictor of posttraumatic symptomatology. This has important implications for treatment, as it can assist in the identification of individuals who are at greater risk for developing traumatic stress reactions (Smith, North, McCool, & Shea, 1990). Currently, a debate exists regarding the predictors of traumatic distress, with some researchers asserting that preexisting psychopathology has a greater influence on the development of traumatic syndromes than does factors such as the intensity of exposure to trauma (Cheung Chung, Easthope, Eaton, & McHugh, 1999).

Another study that investigated the predictors of PTSD was carried out in response to an air disaster that occurred during an air show in Ramstein, Germany (Epstein, Fullerton, & Ursano, 1998). As a crowd of 300,000 watched in horror, several planes from an aerobatic stunt team

collided directly above the field, showering the crowd with burning wreckage. Seventy spectators were killed, and over 500 were injured, mostly from burns. Health care workers at two different locations were surveyed at 6, 12, and 18 months post-disaster using a number of instruments to assess for the prevalence of posttraumatic stress reactions. It was discovered that 13.5% of the respondents were found to have PTSDat 6, 12, or 18 months, with the peak frequency of cases occurring at 12 months after the mid-air collision. The survey also revealed that lower educational level, exposure to burn victims, a greater number of life events considered stressful after the traumatic event of the crash, and feeling numb in response to the tragedy were independent predictors of PTSD outcome. Exposure to child victims and grotesque burn injuries were found to be highly predictive of PTSD in this group (Epstein, Fullerton, & Ursano, 1998).

The reactions of children to the traumatic experience of an air crash and their response to intervention have been documented as well. On January 25, 1990, 21 of 25 children survived the crash of Avianca Flight 52 (Fornari, Fuss, Hickey, & Packman, 1991). The Boeing 707-321B was inbound to New York's JFK airport when it ran out of fuel,

and went down in a wooded area on Long Island's north shore. A disaster mental health plan, which had been in existence for two years, was activated by the Nassau County Department of Mental Health, Mental Retardation, and Developmental Disabilities to attend to the needs of survivors and family members. The major efforts of this plan were carried out in the eight days following the crash and included tasks such as reaching out to individuals, families and the community; providing emotional and social support; assessment of needs and symptom development; education about responses to traumatic stress; and advocating for the needs of survivors and family members. An art therapy/group program was instituted to care for the needs of child survivors, using the techniques of projective drawing and story-telling within the group-therapy format. Fornari et al. (1991) noted the potency of this intervention by way of its ability to counteract the sense of powerlessness inherent in psychic trauma through group support and abreaction. For example, children in this situation were able to process raw emotions associated with the event in the company of experienced and supportive clinicians even though these children were not equipped to directly address the trauma through a more traditional

psychotherapy approach. Further, this program enabled those facilitating it to identify certain children in need of more intensive interventions and make the appropriate referrals. Finally, the program allowed for the possibility of prevention of a variety of symptoms that might otherwise have developed had interventions been delayed. Similarly, Turchan, Holmes, & Wasserman (1992) noted that the use of tricyclic antidepressant medications soon after a traumatic event may help to prevent some of the biological dist-urbances described in PTSD. This was based on observations of the efficacy of pharmacological interventions with two male survivors of the Avianca crash, who received these interventions at different times after the event.

Sugar (1988) outlined the psychotherapy of a four-year-old boy who was exposed to the crash of Pan Am Flight 759 in New Orleans on July 9, 1982. In this example, the Boeing 727-235 came down 75 feet from his home while attempting to take off during a thunderstorm, destroying several homes close to his own and killing eight people on the ground as well as all 145 aboard the aircraft (Gero, 2000). Sugar (1988) cites the sudden overwhelming of his patient's ego with helplessness and the element of surprise as being especially significant in generating the traumatic

neurosis that brought him to therapy. Over the course of the treatment, which consisted of eight months of 34 play therapy sessions, a number of themes emerged. This child talked about fantasies of omnipotence and anger early on, possibly resulting from feelings of vulnerability stemming from the crash and betrayal at adults for not protecting him better. This was followed by fears of annihilation and retaliation, as evidenced by the threat of his home being demolished, and dividing the world into "good guys" and "bad guys" and taking these roles on himself. In the 20th session, this child underwent a "massive abreaction" regarding the trauma, repeatedly going over his experience of it in great detail. This was followed by another abreaction that took place a month later, this time accompanied by extreme anxiety and an even greater detailed account of the crash and its aftermath. Here, the child spoke in an agitated fashion about the noise of the crash, the fires that started, the dangers he faced, anxiety regarding his father's whereabouts, running away from the scene with his mother, and other details. After this session, his play became less violent and better organized, involving less of a focus on airplanes. In the final sessions, the child displayed a sense of mastery and

increased trust through more benign play and less manifested anxiety.

Sugar (1988) further details the case by identifying several characteristics seen from a psychodynamic standpoint common to working with victims of trauma that are relevant to this child's treatment. These include the therapist acting as an auxiliary ego, assisting the patient to withstand the onslaught of affect and terror about facts and fantasies experienced by the victim. Also, mastery of the trauma was evidenced by repeated reenactments of the event, with this child identifying with both the aggressor and fantasy of a pilot who was careful and good. Regression to earlier stages of psychosexual development was also observed, as the youngster experienced a return of enuresis (bedwetting), fire-setting, and defiance towards his parents. This child also displayed anger at airplanes, the airline (Pan Am), and displacing his anger through a rivalry with his father, brothers, and peers. Finally, feelings of guilt had surfaced regarding the child's wish to destroy his home, having anger at his parents, and anger at his brother who he felt had wanted the plane to crash. Sugar (1988) notes the counter-transference features of his work with this child and how it can make working with

traumatized individuals very painful for the therapist. For example, he noticed his desire to escape from the patient's pain, which stimulated past feelings about inadequacy, anxiety, and helplessness. This in turn interfered with his intuition about the case. Sugar (1988) proposes that unresolved trauma in the therapist's past may be related to the relative paucity of detailed accounts of individual therapy with disaster victims in the literature, as there seem to be a greater number of reports in which discussion of treatment can be reported upon in a more superficial, evaluative manner.

This review of the literature also revealed several instances in which the psychological sequelae resulting from a specific air disaster were discussed over several pieces of research. This sometimes would include documentation of the response by the mental health professions. It may be helpful to view how research has been conducted from several different angles that are related to the same event, as incidents with additional or more thorough "coverage" may yield insights into this type of disaster not otherwise obtainable. This holistic approach may be helpful in gaining a more informed understanding of how these large-scale disasters can impact

both individuals and communities, as well as evaluating the

effectiveness of interventions.

For example, several researchers have published their

findings after working with victims of the crash of USAir

Flight 427 on September 8, 1994. This crash was unique in

that its cause eluded investigators for several years, and

it was only recently that they were able to reasonably

conclude what brought the aircraft down (Gero, 2000). The

Boeing 737-3B7 was on its approach to Pittsburgh

International Airport just as the sun was setting when it

suddenly banked sharply to the left. Despite control inputs

by both pilots to regain control of the jetliner, it rolled

upside down, beginning a terrifying dive that ended when it

impacted the hills in the Pennsylvania countryside that

surrounds the city. All 132 passengers and crew were killed

instantly, but the blow dealt to those left behind

continues to be felt, as more than 80% of the victims were

residents of the greater Pittsburgh area (Stubenbort,

Donnelly, & Cohen, 2001). A group therapy intervention

using cognitive-behavioral techniques was carried out that

attempted to promptly serve a large number of affected

families. The goal of this intervention was to enhance

bonding among family members and provide a foundation for

supportive relationships that would potentially last beyond the time limits of the group. Based on their findings, Stubenbort, Donnelly, & Cohen (2001) propose a group-based intervention program for adult and child survivors, and note that the Flight 427 Air Disaster Support League (http//:www.427adsl.org/) as well as the subsequent creation of the National Air Disaster Alliance (http://planesafe.org/) were direct outcomes of the work done with the survivors of this accident.

Additionally, 118 emergency service workers who responded to the crash of Flight 427 were studied to examine the role of cues in the maintenance of their emotional distress (Schooler, Dougall, & Baum, 1999). At 2, 6, 9, and 12 months after the disaster, thoughts related to the crash reported by these workers were categorized according to whether or not the thoughts were triggered by cues. The authors of this research hypothesized that there is a difference in the severity of distress when intrusive thoughts are preceded by environmental triggers that resemble the original trauma, as opposed to when the intrusions are not triggered by cues and instead appear "out of the blue". It was this latter class of intrusions that was found to be associated with more reported

disturbance by the participants. It was also found to be the case that in the first two months after the crash, the magnitude of distress that these thoughts caused was an important predictor in the frequency of unwanted thoughts afterwards.

Lesaca (1996) detailed the distress reported by mental health professionals who provided trauma counseling after the crash of USAir 427. This group may be viewed as having the least intimate relationship to this air disaster in comparison to the aforementioned family and friends of victims and emergency service workers. The responses of 21 professionals who provided these services by meeting with family members of the victims as well as distraught airline employees were collected by having them fill out symptom checklists. These checklists were based on DSM-IV criteria for Acute Stress Disorder and Major Depressive Episode, and they were completed 4, 8, and 12 weeks post-disaster. Their responses were compared to a control group of therapists from the same mental health center who did not provide services to the disaster victims. Analysis of the data revealed that those providers who had responded to this event reported a greater degree of symptoms that included emotional numbing, memory and concentration difficulties,

sleep difficulties, agitation, restlessness, and decreased energy than was reported by the control group. This was found at 4 weeks post-disaster, and at 8 weeks out, this "at risk" group continued to endorse items such as emotional numbing, feelings of being in a daze, and decreased energy. When evaluated at 12 weeks after the crash, this same group reported more avoidance of situations that aroused memories of the trauma to a greater extent than the control subjects, and this was the only significant elevation reported.

On December 12, 1985, a chartered Arrow Air DC-8 Series 63PF crashed on takeoff from Gander Airport in Newfoundland. The jetliner was bringing home 248 soldiers from a peacekeeping mission in the Middle East to their base in Kentucky in time to be with family for the holidays. Because of the buildup of ice on the aircraft's wings that went undetected, it stalled and dropped out of the sky, killing all aboard (Gero, 2000). Katz & Bartone (1998) looked at the importance of rituals undertaken by mourners of traumatic death and applied it to the community of family, friends, and other soldiers left behind in Fort Campbell, Kentucky. They describe it as having the roles of reaffirming social networks of survivors, strengthening

group bonding, and enhancing cultural identities. Perhaps most importantly, rituals can facilitate both individual and group recovery and integration. The rituals observed in the wake of this crash served to assist with the mourning process and help it move through several stages until it had been sufficiently resolved. These stages were: numb dedication, angry betrayal, stoic determination, and integration/cohesion. These researchers noted that passage from one stage to the next was often temporally associated with the occurrence of important social and symbolic events, such as the final burial service.

Several mental health professionals, who had been designated as a consultation team to the mental health staff of the home base of these soldiers, wrote about their experience (Xenakis, Marcum, Maury, & Duffy, 1991). Based on this, they proposed several recommendations as to how to best help those in distress. One of the team's recommendations was based on observations that the consultants were viewed suspiciously and as outsiders, whose activities could usurp the powers of the mental health staff. The consultants noted that the mental health staff, much like a community in grieving, formed a "trauma membrane" which can be viewed as a defensive maneuver to

insulate and protect against further stress, against the
consultation team. This action complicated the consultation
team's efforts to form an effective working relationship
with the staff, as it is manifested by a sense of distrust
of the motives and efforts of the visiting professionals.
The consultation team also emphasized the need to
acknowledge the emotional suffering of the mental health
staff by validating their feelings of being traumatized by
the disaster, and how this was instrumental in establishing
a collaborative partnership in the face of this tragedy.
Additionally, helping the mental health staff cope with
their feelings of rejection and futility when demands for
their clinical services were not apparent helped to shift
the focus from waiting to provide services within the
clinic setting towards a more proactive approach of
marketing services and programs (providing education) to
the community. This is consistent with crisis intervention
theory and can be of great assistance after an aviation
disaster, especially one of this magnitude.

Another example of a request for psychiatric
consultation in the aftermath of an air disaster occurred
in the days after the crash of United Airlines Flight 232.
On July 19, 1989, the United DC-10 Series 10 crashed while

attempting to land at Iowa's Sioux City airport, after the failure of the number two engine in the tail had caused all three hydraulic systems to cease functioning (Sharpe, 1999). This had the effect of removing an automobile's steering wheel while traveling on a highway, and so it was nothing short of a miracle that the flight crew was able to maintain enough control for the aircraft to reach the airport. However, this was not sufficient to execute a safe landing, and an eyewitness captured the crippled jetliner's final moments on videotape as it came in at over 100 miles per hour faster than it should have been traveling for landing. The videotape, which was shown repeatedly on national news networks, shows the aircraft trailing smoke and flames before breaking apart as it slid off the runway and into a cornfield, exploding in a fireball. Flight 232 ended in a calamity that shocked the nation as firefighters and other emergency workers raced to the burning wreckage. Incredibly, of the 296 passengers aboard, 184 survived, some of whom escaped without injury. Approximately 48 hours after the crash landing, a consultative care team assembled at the site to assess and provide recommendations for involved groups such as body handlers, fire fighters, security police, spouses of rescue workers, medical

personnel, and community leaders (McCarroll, Ursano, Fullerton, & Wright, 1992). This group, requested by the U.S. Air Force Surgeon General, was to specifically evaluate and provide support to volunteers from the 185th Air National Guard Tactical Fighter Group who were serving as rescue workers. The intention of the consultation was to prevent later psychiatric distress and to facilitate the recovery of these workers. One of their efforts included providing a space on a daily basis in which the workers could discuss their experiences of handling dead bodies, some of which were badly mutilated and/or children. The consultation team also worked closely with the commander of the National Guard unit and his staff to plan activities that would promote community recovery, to provide information about what to expect as the recovery operation progressed, and to assess those referred to the commander. These actions helped to facilitate a return to normalcy in the affected community, which was noted when members of the consultation team returned for a follow-up visit six weeks after the air crash. These researchers noted several lessons learned during this assignment that would be helpful to consider in similar intervention efforts in the future. Among these was the conviction that consultation to

disaster should not be a one-time intervention; its length should be determined by the extent of the trauma, the nature of groups affected by it, the types of problems encountered, the frequency of requests, and evidence for the onset of recovery. Also, the importance of "grief leadership" was stressed, in which expressions of grief by those in leadership positions has the effect of validating such expressions by subordinates (McCarroll, Ursano, Fullerton, & Wright, 1992).

Jacobs, Quevillon, & Stricherz (1990) observed that there was less preparation for the psychological response to the disaster of Flight 232 than the medical response when they offered their clinical services to the recovery effort as faculty members of the University of South Dakota's clinical psychology department. The offer to the Sioux City chapter of the American Red Cross was accepted, and over 600 hours of mental health services were provided to survivors and family members by these authors and 16 clinical graduate students over four days. Jacobs et al. detailed aspects of their involvement with this catastrophe in several areas. One of these areas involved coordinating the efforts of the mental health community during the crisis, which included the establishment of a Family

Services Center as well as the identification of a

qualified individual who would serve as the site's

coordinator. Also, the structuring of this site was

emphasized, such as the need for an effective system of

selecting and registering volunteer counselors, and keeping

track of which family members each counselor has been

assigned to. Further described was the benefit of

interactions between the site coordinator and an airline

liaison, which served to dispel rumors and misunderstand-

ings, potential pitfalls of speaking to the media, and the

value of psychological debriefings provided to those

vulnerable to stress reactions (Jacobs, Quevillon, &

Stricherz, 1990).

Critical Incident Stress Debriefing

Debilitating stress reactions are not only found in

the direct victims of disasters. Working with the victims

of disasters often, if not always, imposes severe stresses

upon those responsible for rescue and recovery operations

(Mitchell, 1983). Research has demonstrated that the lives

of these professionals can be affected by disaster in much

the same way as with civilian exposure to trauma, despite

the professionals' training to "expect the worst". The

psychological responses to the horror of human suffering are no less devastating when being experienced by police, firefighters, and paramedic units, as examples. In recognition of the toll exacted by the large-scale death and devastation that is often present in modern disasters, a crisis intervention technique known as "Critical Incident Stress Debriefing (CISD)" was developed to address the issue of posttraumatic stress in emergency responders. Mitchell (1983) defined a critical incident as "any situation faced by emergency service personnel that causes them to experience unusually strong emotional reactions which have the potential to interfere with their ability to function either at the scene or later." These reactions may be especially harmful if individuals who are experiencing them denies their presence or interprets the reactions as something that is wrong with themselves.

Traditionally, the term "debriefing" was used to refer to a post-incident review of operational procedure by the military (Wollman, 1993). CISD represents an organized approach to the treatment of posttraumatic stress responses in emergency service workers (Mitchell, 1983). It has the goals of providing support and minimizing the development of abnormal stress responses that may interfere with work

and family functioning. CISD involves specially-trained individuals facilitating either individual or group meetings with these workers that allows for ventilation of the intense emotions, support and reassurance, and the mobilization of resources. It has been reported that the effectiveness of this intervention decreases the longer that it is delayed after the stressful event. Recently, the CISD intervention has been incorporated as a single component into a more overarching, multi-part crisis intervention approach labeled "Critical Incident Stress Management (CISM)", which may be more effective than single-session methods such as CISD (Richards, 2001; Turner, 2000).

Mitchell (1983) also delineates four types of CISD which are distinguished by the time after an event they are instituted but have the same overall goals. "On-Scene" or "Near-Scene" Debriefings are usually the most time-limited in scope, and take place at the disaster site itself. It relies heavily on observation and assessment of workers' performance, and can be instrumental in safely managing the amounts of traumatic stimuli workers are being exposed to, which in theory will attenuate the severity of stress reactions. "Initial Defusing" is an informal type of CISD

in which the focus is on the availability of a positive and supportive atmosphere that provides care and concern for involved team members. It has less of an emphasis on being led by a facilitator and usually takes place within a few hours of the critical incident. "Formal" CISD represents the in-depth group discussion of the event and its emotional concomitants, and thus is typically led by a trained mental health professional. It is essential that this facilitator has good communication skills, a good background in group dynamics, and knowledge of stress response syndromes. This intervention usually takes place within a day or two after the event, after the normal defense of intellectualization has decreased and feelings begin to surface. Finally, "Follow-up" CISD may take place weeks or months after a disaster or critical incident, and is designed primarily to resolve some issue related to the event that is still present.

Formal CISD, with which many people are familiar, is made up of six distinct phases which help its participants to uncover and process intense emotion in a safe, structured format (Mitchell, 1983). An introductory phase is used to set forth the ground rules of the debriefing, such as the importance of confidentiality for all

participants. A fact phase follows the introduction, where the incident is reconstructed and participants state their recollections of the event, such as their responsibilities, location, and sensory perceptions while working. Third, a feeling phase allows participants to express fears, anxieties, anger, frustration, ambivalence, guilt, and other concerns. Next, participants are urged to describe how the incident has affected their lives in the symptom phase of Formal CISD. Here, people are free to discuss their response(s) to the traumatic stress in their own words. This is followed by the teaching phase, in which the facilitator provides education about the variety of stress response syndromes and normalizes the occurrence of symptoms after living through a critical incident. Finally, the re-entry phase is carried out, which helps to provide additional reassurance, answer any additional questions, and formulate a plan of action.

Because of its utility, CISD is increasingly being used with a variety of populations after a multitude of critical incidents (Wollman, 1993). These can include industrial crews after a fatal accident, school students coping with a peer's suicide, bank staff traumatized by an armed holdup, and hospital staff after an assault by a

patient, among others. Support for the effectiveness of CISD can be found in both the more than 300 formally trained CISD teams in the United States, Canada, Australia, and Western Europe, and greater than 10,000 completed CISD interventions that have been reported (Everly, 1995). The provision of mental health services after a traumatic incident has received support from organizations such as the American Red Cross, American Psychological Association, the American Mental Health Counselors Association, and others. Everly (1995) outlines a form of CISD that is intended for events involving prolonged or repeated trauma (such as mass disasters or military action), similar to Herman's (1997) "complex PTSD" syndrome. Some notable events that would fall into this category include the Mexico City earthquake in 1985, Hurricane Hugo in 1990, the Los Angeles riots in 1992, and the bombing of the World Trade Center in 1993. Plaggemars (2000) discusses the incorporation of CISD into employee assistance programs for workplace-based interventions, addressing such issues as domestic violence, homicide, suicide, and departmental reorganization and change.

Given the number of debriefing models that have proliferated, Everly and Boyle (1999) conducted a meta-

analysis of the effectiveness of CISD. They note the importance of sharply defined taxonomies in attempting to evaluate this intervention, which has often been disregarded. The focus of this investigation was CISD only, as other types of group crisis intervention and psychological debriefings have been evaluated as well. Across a wide variety of subject groups, traumatic events, and a diversity of outcome measures, the power of CISD to mitigate symptoms of psychological distress was demonstrated by pooling outcomes from five different empirical studies. A significant effect size (Cohen's d=.86) was found when aggregating the data (Everly & Boyle, 1999), indicating that CISD appears to have a high success rate.

However, some researchers have cautioned against the use of CISD, as there have been mixed conclusions about its efficacy as reported in the literature (Turner, 2000). Tobin (2001) asserts that it is only of use after a major incident that typically involves a significant loss of life, and should be applied sparingly using highly trained personnel. It is further advised that legal liability may be assumed when this intervention is or is not initiated. Additionally, evaluations of CISD in the literature

typically only look for its effectiveness in addressing core diagnostic features of Posttraumatic Stress Disorder. However, there are other consequences of psychological trauma, such as comorbid psychopathology, substance abuse and impaired social functioning, that may be attenuated by debriefings as well (Deahl, Srinivasan, Jones, Neblett, & Jolly, 2001). These researchers call for a broader range of outcome measures to be used in order to address these controversial findings and properly determine the efficacy of CISD.

As an example of the use of this intervention after a traumatic event that was not a large-scale disaster, Campfield and Hills (2001) conducted CISD with two groups of robbery victims who received the service either within ten hours or greater than 48 hours after the event. Symptoms of posttraumatic stress reported by participants were assessed at the time of debriefing, two and four days after being debriefed, and two weeks after the event. Scores from a scale of posttraumatic stress symptoms did not differ at the initial assessment point; however, at each assessment thereafter, the number and severity of symptoms reported was less in the group that received CISD immediately than in the delayed treatment condition. While

this reduction in the number and severity of symptoms was noted in both groups across the time intervals, it was more pronounced in the immediate debriefing group.

Turner (2000) outlines the use of both debriefing and extended group treatment formats in the aftermath of a bus crash which killed several people in March 1996. The victims of this accident, 17 American college students during an international studies program in India, participated in initial debriefing sessions followed by a series of 11 trauma/grief focused sessions over the next 6 weeks. Nearly a year later, a follow-up survey was distributed to the participants to assess their degree of psychological recovery and perceptions of helpfulness of the interventions. The most powerful aspect of the group(s) was in helping members to test their perceptions and memories of the event, as well as attributing meaning to the event from the survivors' collective experience. Turner (2000) also notes the difficulty of interpreting observational experiences objectively, and how research often has to struggle to be able to generalize results as research designs become more controlled. He also acknowledges the potential problems of response bias created by using a personalized request in soliciting

individuals to complete the survey, as he was personally involved in the intervention itself. This pitfall, it is stated, is countered by the increased response rate and clinical richness of extended written personal comments that were provided by some of the respondents.

Another example in which debriefing was used took place after Hurricane Iniki made landfall on the Hawaiian island of Kauai on September 11, 1992, which was among the most costly natural disasters in U.S. history (Chemtob, Tomas, Law, & Cremniter, 1997). Two groups of survivors were debriefed at separate times. Both of these groups completed the Impact of Event Scale (IES) before and after the intervention. There was a significant decrease in IES scores in both of these groups, suggesting that a substantial reduction in hurricane-related distress was at least in part attributable to having gone through the debriefing. Interestingly, Chemtob et al. (1997) comment that the Federal Emergency Management Agency (FEMA) prohibits attempts to conduct evaluations of its disaster counseling programs, thus restricting efforts to study treatment outcomes in groups selected from the general population.

CISD has frequently been conducted after aviation disasters as well. One of the first examples of this involves the crash into the Potomac River of Air Florida Flight 90 on January 13, 1982, in which debriefings were held for rescue workers (Mitchell, 1983). One study that has been cited as evidence that CISD may not be a successful technique described the comparison between debriefed and non-debriefed police officers' who attended the El Al 1862 disaster mentioned earlier (Carlier, Lamberts, Van Uchelen, & Gersons, 1998). Here, posttraumatic symptomatology was assessed using structured clinical interviews at eight and 18 months post-disaster. No significant differences in reported distress were found between the debriefed and non-debriefed officers at the eight month interval, and significantly more hyperarousal symptoms of PTSD were reported by the debriefed group at 18 months after the crash. One explanation offered is that police undergo preemployment psychological screening to ensure selection of persons more resilient to repeated stressors than most, which may have influenced the amount of reported (or even subjectively experienced) stress.

In "Debriefing Following Trauma", Fullerton, Ursano, Vance, & Wang (2000) distinguish between formal and

informal or "natural" debriefing in seeking to understand who attends each, and to identify groups that may potentially be at risk for the development of PTSD. Natural debriefing takes place when persons affected by traumatic events turn to family and friends instead of mental health professionals to process intense emotions. These researchers surveyed 254 medical workers who responded to the Ramstein Air Show disaster and 207 Air National Guard workers after the crash of United 232 to investigate coping responses used. Those with acute PTSD, higher total and intrusive symptoms on the Impact of Event Scale, higher education level, greater exposure to the disaster, and those who were older and/or married were most likely to engage in natural debriefing with people like spouses and coworkers. Additionally, females and those with higher levels of disaster exposure were found to be more likely to attend a formal debriefing.

Finally, Scott (2000) proposes an Initial Stress Inoculation Program as an adjunct to CISD for American Airlines' flight attendants who are involved in emergency situations. She states that such a program would be helpful to these employees, as currently they only receive advance training for the practical and knowledge-based aspects of

handling emergency situations that do not include a psychological response component. Also, it is pointed out that CISD has not been proven to be sufficiently effective when administered by itself. In the proposed program, a CISD intervention would take place in the aftermath of an actual emergency that was more tailored to the flight attendant population. However, flight attendants will have already received prior sensitization to traumatic stressors they might confront while on duty, theoretically resulting in fewer stress responses.

Providing Organized Psychological Care to the Air Transport Industry

This section will deal with how the U.S. Government, as well as other organizations, has attempted to improve psychological care provided for victims of air disasters. As stated previously, care had up to this point only included treatment for physical injury. Were it not for the advocacy efforts of air disaster victims as well as others who felt that this was a necessary step forward, the education and training needed to accomplish the task of improving mental health care may not have taken place.

To begin, it is noteworthy that the first large-scale organized efforts to understand the problems generated by disasters originated with the American Red Cross (ARC) in 1989 (Weaver, Dingman, Morgan, Hong, & North, 2000). At this time, the ARC created the Disaster Mental Health Services (DMHS) program, designed to meet the mental health needs of disaster victims, including that of ARC workers responding to crises. This was done in recognition of the emotional toll on these workers and disaster survivors, reported through surveys completed by 3,800 ARC workers at the beginning of the 1990's. An expert task force was assembled to study this issue, and to make recommendations for the construction of the DMHS program and training of mental health professionals in Red Cross principles and procedures. This is reflected by the Red Cross on their website: "Disaster Mental Health Services workers are licensed mental health practitioners trained to recognize the emotional impact of a disaster on those affected by the disaster as well as disaster workers" (American Red Cross, n.d.). One of the ideas expressed here was the integration and cooperation of several mental health disciplines, including psychology, psychiatry, social work, and counseling. This integration owes its success to the

generic approach of the DMHS program, in that it views the professional specialties as functionally interchangeable. For example, all DMHS workers receive identical training regardless of their professional orientation. This has helped to decrease "turfism", or interprofessional conflict, that is often generated when the agendas of different professionals come into conflict with one another. Since the inception of the DMHS program, many local Red Cross chapters have begun similar initiatives molded on the national template, such as that started by a group of social workers in the Lehigh Valley, Pennsylvania area in response to the 1991 Persian Gulf War (Weaver, Dingman, Morgan, Hong, & North, 2000).

In addition to the DMHS program, the ARC has formed the Aviation Incident Response (AIR) Team concept, made up of trained and experienced Red Cross disaster management specialists (National Transportation Safety Board, 1999). The AIR Team mobilizes within 4 hours of an air crash, travels to the crash site, and coordinates and manages the Red Cross response. This is beneficial in that the members of this team have expertise specific to air disasters and the resultant needs.

The ARC was eventually selected to be the independent nonprofit organization requested by the United States Congress in 1996 to administer psychological care to victims of air disasters occurring within the United States (Aviation Disaster Family Assistance Act of 1996, H.R. 3923, 104th Cong., 2nd Sess.[1996]). Called the Aviation Disaster Family Assistance Act of 1996, it gave authority to provide such assistance via the National Transportation Safety Board (NTSB).

This act was the foundation for the Federal Family Assistance Plan for Aviation Disasters, dated on July 6, 1999 (National Transportation Safety Board, 1999). The purpose of this plan is to assign responsibilities to appropriate organizations and provide a description of airline and federal response to an air crash that involves a significant number of passenger fatalities and/or injuries. The plan outlines tasks to be carried out by the NTSB, the airline(s) involved, the ARC, the Department of Health and Human Services, the Department of Defense, the Department of State, FEMA, and the Department of Justice. It is reasoned that this will allow local and state-level efforts to benefit from resources at the federal level. In summary, this document enables the NTSB to make use of the

collective resources of the federal government, and to send aid to areas in need of assistance. Prior to this piece of legislation, victims of air disasters had primarily received assistance from the involved airline(s). Acknowledging that effective communication and sharing of information is key to successful emergency response, the NTSB replicated the Emergency Operations Center concept in designing the Joint Family Support Operations Center (JFSOC). This facility serves as the central focal point for this information transfer, specifically oriented to family members of those who perished in an aviation crash.

Psychological care has been augmented recently with the creation of the Family Support Team (FST) (Skudlarick, Pontante, Watson, & Dunham, 2001). The aim of the FST is to provide volunteers to offer direct support for survivors and victims' families after an air crash. Volunteers are made up of survivors and family members of previous air disasters who have the unfortunate direct experience of interacting with the myriad support and investigative agencies during times of tragedy. Volunteers are trained to become FST Escorts, assisting families and survivors in obtaining physical, emotional, and material resources in the immediate aftermath of a crash. These escorts are also

trained as empathetic listeners and will understand the importance of maintaining the privacy and confidentiality of those they are helping. However, it is explicitly stated that these volunteers are not counselors, and they may not offer such counseling, spiritual guidance, or legal advice. Currently, a training program to bring in a sufficient number of volunteers is underway, which (it is hoped) will enable FST members to be found in many different parts of the U.S., able to respond on short notice.

In summary, this review of the literature reveals several important themes. The history of mental health services provided in the aftermath of aviation disasters began with the recognition that air disaster victims were much like victims of other disasters, both natural and man-made, in that these victims suffer physical as well as psychological injuries. Therefore, an attempt to expand the spectrum of care provided to this population to include mental health assistance seems justified. Statistics detailing the rise in air travel would support this, as greater travel numbers point to a greater probability of the occurrence of air crashes.

Historically, few attempts have been made to evaluate these mental health services. Many studies have provided

descriptions of the psychological distress reported by the different groups of people created by these disasters. In several instances, researchers have outlined their efforts subsequent to a specific air crash. One specific intervention that has been used with air disaster victims includes Critical Incident Stress Debriefing, which has been critically evaluated and found to generally effective across a range of settings. In some cases, authors have gone so far as to making recommendations specific to working within this environment. This review shows that it is only recently that large-scale efforts have been made to organize the response of psychologists and other similarly trained professionals. Viewing this trend from an outcomes perspective, it helps to generate the hypothesis that due to an increased focus on providing the best possible treatment in these situations, the efficacy of mental health services has been improving over time.

This concludes the review of the literature pertinent to the topic under study in this dissertation. While there are other research reports and articles which deal with the subjects covered in each section of this chapter, only those most relevant to this investigation warranted

inclusion. The next chapter will discuss the research methodology undertaken in this investigation.

III. Methodology

Population

The population for this study consists of members of the National Air Disaster Alliance/Foundation (NADA/F), an independent, nonprofit organization incorporated in 1995. The mission of NADA/F is to raise the standard of safety, security, and survivability for aviation passengers and to support air crash survivors and victims' families (National Air Disaster Alliance & Foundation, n.d.). NADA/F is presently the largest grassroots advocacy group working for aviation safety, and it represents those impacted by over 90 aviation disasters. This work is accomplished by working with survivors of air disasters, family members, aviation professionals, government, social service agencies, industry, and other air crash groups.

NADA/F meets annually in Washington, DC. In addition to attending to the administrative and financial health of the organization, a number of presentations regarding the status of aviation safety takes place over the weekend-long meeting. The content of these presentations includes the fields of science, politics, law, and journalism, and how they have intersected with air safety. In addition, members are updated about the status of key issues that NADA/F may

be working on at that time, such as supporting the
installation of smoke detectors in the cargo holds of all
passenger aircraft. Also, each annual meeting begins with
members introducing themselves and how they came to NADA/F.
Most NADA/F members are survivors of air disasters or
family members of passengers who were killed in air
disasters. The meeting is interspersed with breaks and
meals, providing attendees who have been brought together
by tragic circumstances with an environment that validates
their experiences and an opportunity to support one another.

Many members of NADA/F are representative of a number
of air disasters that span over 40 years of air travel.
Some are members of other air disaster groups as well.

Instrument

In this study, the measurement of perceived efficacy
of post-disaster intervention was accomplished via the
Client Crisis Satisfaction Index (CCSI) (Soliman & Poulin,
1997) in addition to qualitative data solicited in
narrative form. The CCSI was developed to evaluate client
satisfaction with disaster services. Prior to the
introduction of this instrument, none of the client
satisfaction with mental health services scales that

existed previously seemed appropriate for evaluating the effectiveness of crisis outreach services delivered to the survivors of disasters. Soliman and Poulin (1997) identified aspects of disasters that both distinguished them from other mental health crises and had not been assessed by already existing instruments, such as sudden and overwhelming environment changes that may pose a threat to the well-being of a survivor.

These researchers constructed 42 items that were measured on a Likert scale, ranging from zero (not at all) to ten (completely). These items appeared to be relevant to seven client satisfaction domains that seemed appropriate for initial inclusion into the CCSI. Six remained after one of the domains failed to achieve a sufficient degree of internal consistency (alpha coefficient=.4419) and uni-dimensionality. These six domains were subjected to a factor analysis using principal component analysis, which resulted in the emergence of five factors and 37 items spanning them. The factors are identified as: Impact of Service, Worker's Skills, Clarity of Service, Appropriateness of Service, and Timing of Service.

The CCSI was mailed to 264 individuals who were residents of 39 Illinois counties affected by the Great

Flood of 1993. These participants had responded

affirmatively to an initial screening survey asking them if

they had received outreach mental health services through

the state's Department of Mental Health and Developmental

Disabilities. These services included information and

referral, public education, screening, consultation, and

advocacy, to name a few. Ninety (34%) of the 264 people

solicited returned completed surveys, enabling the CCSI to

be refined into its present form. This study yielded very

high estimations of the CCSI's reliability. However,

Soliman & Poulin (1997) acknowledge that the relatively

small sample size used here limits generalization of these

findings, and indicate that further reliability and

validity testing of the CCSI is required.

The CCSI used in this dissertation (see Appendix A)

was accompanied by a second page which allows respondents

to provide open-ended feedback about their satisfaction

with mental health services received (or not) after an air

disaster. This space was made available for two reasons.

Given the sometimes constraining nature of scaled items to

individuals responding to them, the "richness" or depth of

responses that allows for more contextual clarification can

be lost to the researcher. That is, the potential for

obtaining data and information not likely to emerge from quantitative methods can be increased by using a more open-ended approach (Kazdin, 1998). The quantitative tradition does not ordinarily consider topics such as the human experience and subjective views of a situation, which can be very valuable in informing an evaluation of psychological intervention. Although this approach has been accused of being "soft science" that is without the rigors of quantitative objectivity, it can provide the very descriptions and elaborations of experience that are otherwise unattainable.

In this investigation, the likelihood of obtaining qualitative data may be low in those who did not receive or seek out mental health care after their air disaster. Also, if their event took place before the Aviation Disaster Family Assistance Act went into effect (before psychological care was better organized), this too might decrease the likelihood of obtaining qualitative information. Finally, quasi-demographic information was requested of all participants in the form of the date of the air disaster in which they were involved, the airline and flight number, and whether the participant was a survivor of, or someone who lost family or friend(s) in, an

air disaster. Any other information that could have had any chance of identifying participants was not solicited.

Each stapled questionnaire form was accompanied by a consent form (see Appendix B). This explained the purpose of the investigation, methods to examine the concept under study, the participant's right to terminate participation, and methods undertaken to protect subjects' confidentiality and privacy. It also stated the risks and benefits to participants and any compensation that would take place (none in this case). The consent form also provided the name of the investigator's chairperson, as well as the investigator's phone number should any questions arise.

Study Respondents

Respondents voluntarily participated at the 2002 NADA/ F Annual Meeting, with the permission of its president. The investigator presented the purpose of this research, issued directions as to how to complete the survey and turn it in, and answered any questions. The investigator then left the room and provided separate boxes in which the surveys and consent forms were to be deposited. In all, fifteen meeting attendees elected to voluntarily participate, which resulted in the return of fifteen surveys and fifteen

consent forms. The analysis of this data will be discussed in the next chapter.

IV. Results

As stated previously, fifteen surveys were completed
providing data on ten air disasters, which span forty years
of air travel from 1961 to 2001. Of the fifteen responses,
fourteen were completed by individuals who identified
themselves as family members of victims, while one was
completed by an air crash survivor. Thirteen respondents
reported on air disasters that occurred before the
previously mentioned Aviation Disaster Family Assistance
Act of 1996 went into effect, with only two surveys
pertaining to events which took place after the legislation
was passed. Two respondents indicated that they had
received some psychological assistance in the immediate
aftermath of the disaster, up to two weeks afterwards.
Three respondents stated that they did not receive mental
health services in the first two weeks, but did indicate
receiving services after two weeks had passed. None of the
respondents reported receiving both; that is, both
immediately after the air crash and lasting beyond two
weeks. Finally, ten participants reported that they did not
receive any psychological services.

On first inspection, it became evident that some of
the surveys were not fully completed. Six surveys contained
responses to the scaled items as well as narrative feedback

that had been provided on the second page. Nine of the surveys contained only the narrative feedback, with some respondents indicating that the scaled items were not applicable to their situation. Because of this, it became necessary to review the available data in search of themes that appeared over several of the questionnaires. After examination of this feedback, several themes emerged with respect to the provision of mental health services:

1. Help/services were offered;

2. Help/services were sought out privately (includes use of organizations such as Compassionate Friends);

3. Nothing was offered or made available;

4. There was no need for help or services;

5. Poor service was provided, or access to services was poor;

6. Physical and/or psychological symptoms were reported as part of the feedback;

7. Friends/family/community were reported as helpful to the individual's recovery

Frequency data for these domains are represented in Table 1. It can be seen that themes 3, 4, and 5 are most

frequently mentioned by the participants. These include

mentioning that no psychological services were offered/made

available, mentioning that psychological assistance was

sought out privately, and mentioning that service that was

provided was of poor quality, respectively.

Table 1: Frequency data for narrative feedback,

by theme (n=15)
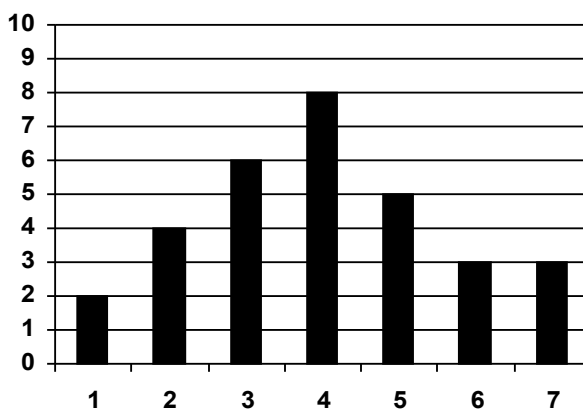
Legend

1: Respondent reported no need for help or services (2)

2: Help/services reported as offered (4)

3: Help/services were sought out privately (6)

4: Nothing was offered or made available (8)

5: Provided services rated as poor, or access to services
   rated as poor by respondent (5)

6: Physical and/or psychological symptoms were
   mentioned by respondent (3)

7: Friends/family/community were reported as helpful

to the individual's recovery (3)

The theme that no psychological assistance was offered or made available to these air disaster victims was endorsed by eight participants, or 53% of the sample. These individuals experienced their traumatic events between 1961 and 1996; thus, this theme appears to be fairly pervasive across a 35-year time period. However, subjects representing other air crashes during this period did not report this and instead reported on other aspects of their experience, such as seeking out their own help. One subject indicated that friends and family were the primary agents of emotional support, while another rated the mental health services they had obtained privately as "excellent" in helping them cope with the loss of a family member. One subject described his or her recovery process as "a long journey of healing," which was complicated by having to live with posttraumatic stress syndrome. The air disaster survivor stated that no mental health services were available, and included in this response was a detailed description of the crash. This description also listed details of the physical and emotional responses of this

individual and fellow passengers, including fear, panic, and sadness.

Theme #3, mentioning that psychological assistance was sought out privately, was the second most frequently encountered in the responses of this sample. Here, six subjects (40% of the study sample) described a number of avenues that brought them into contact with mental health professionals that had nothing to do with the airline or government entities offering these services. However, two of these individuals did explain that seeking out help privately was in addition to various kinds of offers for mental health treatment. Out of these six respondents, three rendered a positive evaluation of these "outside" services, in that their recovery from the trauma was facilitated by this privately-obtained assistance.

The third most frequently reported theme in this sample was the perception of poor service from individuals or groups providing counseling/mental health, or poor access to these services. Five subjects (33% of the sample) mentioned this as a part of their experience. Some of the words and phrases that were used to describe their interactions with those providing emotional support or counseling included "poor," "ineffective," "nondescript,"

"useless," "too soon," "unprepared for this type of situation," "could not handle the raw emotions my family had," "could have used more information in the beginning about where to find a grief counselor," and "did not know how to help me." It should be noted that the vast majority of these responses pertain to services that air disaster victims were offered, and not to services that were sought out privately. Furthermore, privately-obtained services tended to be characterized by the subjects as "good, respectful, and helpful," "have been a great help," and "excellent and greatly aided me in coping with the loss."

Three subjects (20%) mentioned turning to family, friends, and other community members for assistance and support with the grieving process. All three listed this after describing a poor experience with professional intervention or not having any services offered to them. Only 2 subjects (13%) remarked not experiencing a need for psychological care, based on not seeking out services or not feeling that such services would be helpful.

Much of this narrative feedback conveys a sense of emotional suffering that is commonplace after experiencing a traumatic event. In this sample, three respondents (20%) included specific comments related to past or current

emotional and/or somatic complaints that may or may not be related to the air disaster they experienced. Some of these included particular mention of posttraumatic stress syndrome, temporomandibular joint syndrome (TMJ), breast cancer, fear, panic, and sadness. In addition to providing depth to the understanding of the emotional and physical pain experienced, the presence of these comments provides support for the idea that it is sometimes necessary to look beyond the constraints imposed by scaled items in order to more fully comprehend an individual's self-reported distress and the efforts taken to heal from it.

In its present form, the CCSI asks subjects to provide a rating from zero to ten on each of 37 items. Lower numbers indicate general dissatisfaction with provided services, while higher numbers indicate moderate to high satisfaction with these services. It must be stated that with such a low number of subjects having completed the CCSI portion of the questionnaire used in this study (6 subjects, or 40% of the sample), advanced statistical analyses of this data would be ill-advised. However, it is possible to employ more basic descriptive statistics in evaluating these results.

Overall, 207 CCSI item responses were received from the six respondents out of a possible 222 (bear in mind that each subject is asked to provide 37 answers [five subjects did not respond to all of the items]). In an attempt to break down this data to make it more meaningful, three basic categories were delineated by this author to assess overall satisfaction values: 0-3, 4-6, and 7-10. The first category, 0-3, may be thought of as representing a general dislike or dissatisfaction with services rendered. The middle category of 4-6 contains a "middle ground" in which subjects reported a moderate level of satisfaction with or benefit from services. Lastly, the category of 7-10 ratings can be seen as describing services as quite to very satisfactory, with a high degree of perceived benefit.

There were 80 responses in the 0-3 category, accounting for 39% of the total number of responses provided. In the 4-6 category, there were 38 responses, comprising 18% of the total. Finally, there were 89 responses in the 7-10 category, which represents 43% of the total response set. These six subjects are representative of five air disasters which span from 1988 through 2001. In Figures 1, 2, and 3, which represent changes in frequency data for each category with respect to the passage of time,

it is possible to view whether any positive or negative

trends exist, at least for this data set. Figure 4 displays

the data for all categories together. In each figure, the

legend assigns a time point for the date of each accident

described. For example, Figure 1 depicts the frequency of

0-3 responses reported by six individuals across five air

disasters, so the CCSI of the subject who experienced their

air disaster in December 1988 contained four 0-3 responses,

while the CCSI of the subject who experienced their air

disaster three years later contained 22 0-3 responses.

Figure 1: Frequency of 0-3 responses (Category 1, general dissatisfaction with services) on CCSI, 1988-2001
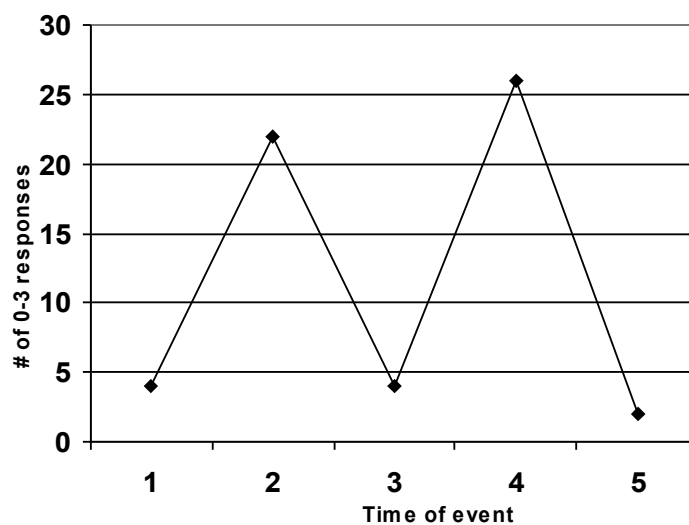
Note. Time #2 represents the average of two subjects' responses, as both are responding to the same event.

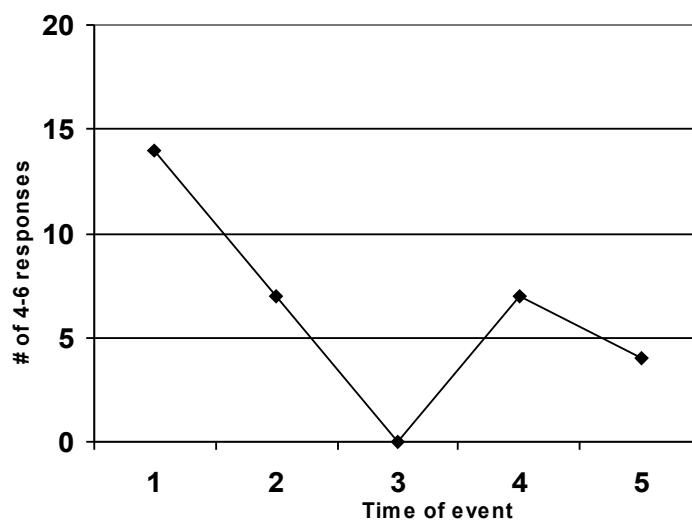   1- December 1988

    2- December 1991

    3- April 1996

    4- July 1996

    5- November 2001

Figure 2: Frequency of 4-6 responses (Category 2, moderate level of satisfaction with services) on CCSI, 1988-2001

Note. Time #2 represents the average of two subjects'
responses, as both are responding to the same event.

    1-December 1988

    2-December 1991

    3-April 1996

    4-July 1996

    5-November 2001

**Figure 3: Frequency of 7-10 responses (Category 3, high
level of satisfaction with services) on CCSI, 1988-2001**

Note. Time #2 represents the average of two subjects'
responses, as both are responding to the same event.

   1-December 1988

   2-December 1991

   3-April 1996

   4-July 1996

   5-November 2001

**Figure 4: Frequency of responses in all categories on CCSI,
1988-2001**

Note. Time #2 represents the average of two subjects'
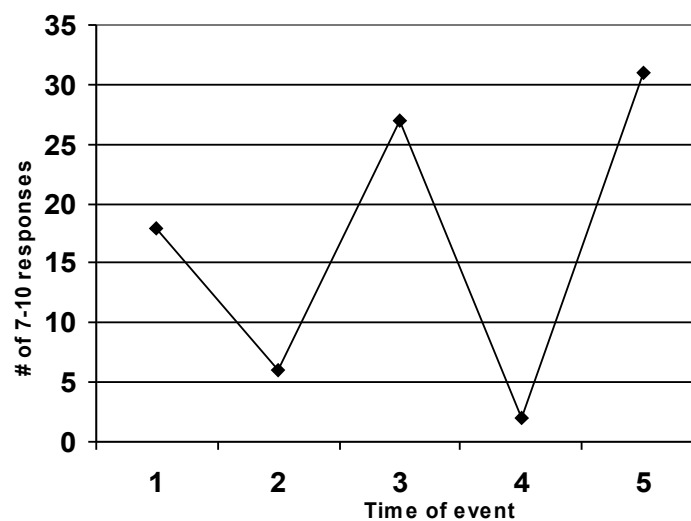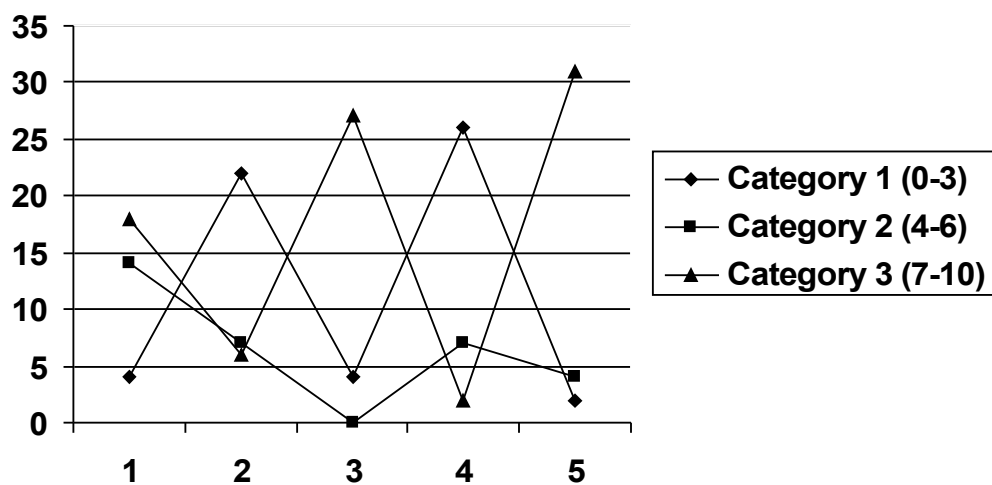responses, as both are responding to the same event.

    1-December 1988

    2-December 1991

    3-April 1996

    4-July 1996

    5-November 2001

V. Discussion

This final section of the dissertation will discuss the results obtained from the 15 participants in this study. These findings will be integrated with conclusions and recommendations regarding the evaluation of psychological treatment for victims of air disasters.

First, it is noteworthy that the majority of those surveyed (53%) revealed that nothing in the way of mental health care was offered or made available to them after the tragedy which changed their lives. This echoes what has been found in the literature. It is not especially surprising given the recency of efforts to organize this care after an air disaster occurs. Also contributing to this figure is that nearly all of this study's participants (as well as the majority of the population of NADA/F members) is comprised of victims from disasters which occurred several years ago, before the provision of care became a routine occurrence.

Second, one-third of the sample described the services which were provided or sought out as negative in some way. This does not mean that the remaining two-thirds rated the help they received in a positive light, or even that the remainder of the sample received services. This is significant in that it reflects a premise stated earlier in

this work: that the field of psychology has much to offer in caring for disaster victims and that the lack of this care or care that is perceived as inadequate is antithetical to the existence of this field of study. It is of concern that the field of mental health may be viewed skeptically when it truly does have much to offer in alleviating emotional distress. Even given the low number of such adverse narrative ratings when considering the size of this population, the fact remains that these individuals reported negative experiences with mental health professionals (and non-professionals) and may very well be wary of future interactions with counselors, psychologists, psychiatrists, clinical social workers, and other similar fields.

In looking at the CCSI ratings over time for Categories 1, 2, and 3, it would appear desirable to see the ratings for overall dissatisfaction (Category 1) decrease, while the ratings for high levels of satisfaction (Category 3) increase. This type of result would tend to support the research question under study here. Instead, it is obvious to the reader that no discernable pattern emerges with either Category 1 or 3. This, in combination with using data from only six subjects to plot the

relationship between perceived quality of mental health and the passage of time causes any inferences drawn about the nature of this relationship to be speculative at best. In a similar vein, the number of 0-3 and 7-10 responses being as close together as they are (80 and 89, respectively) would signal that at least in this sample, the group indicated that the services received were about as beneficial as they were detrimental to their recovery from these traumatic events. Looking at individual CCSI score profiles, one individual indicated more moderate to high satisfaction, while another reported an overall sense of dissatisfaction. It might then be stated that the quality of mental health services has been more a factor of how each individual fares in obtaining these services on their own. The narrative data would support this possibility as each subject appears to have nurtured their recovery in significantly diverse ways.

Because of this, it would not be possible to state that this research supports or disconfirms the hypothesis that the quality of mental health services has increased over time. Looking at Figures 1 and 3, there is excessive variability in the frequency of 0-3 and 7-10 ratings over time, respectively. If this pattern were revealed after the

analysis of sixty subjects' CCSI scores instead of six, it would be able to be stated with a greater degree of certainty that the perceived quality of mental health services after an air disaster does fluctuate considerably. Because of having only six subjects complete the CCSI, this investigation is unable to determine whether or not this is truly the case.

There are several limitations to this study. Perhaps the most evident of these is the aforementioned small sample size which makes generalization of the results to this population of disaster survivors an ineffective means of understanding this issue on a larger scale. That is not to say these data are irrelevant; rather, they capture the subjective experiences of those who did report their impressions. Two purpose of this research were to gather initial information regarding the benefit of mental health interventions in terms of access of care and perceived efficacy of this care, and report the findings. These goals were achieved. However, even with a larger sample taken from this population, it is unclear whether this investigation would have arrived at a different conclusion as to the actual effectiveness of psychological intervention after an air crash. Again, subjects appear to

have selected different combinations of emotional support options. This introduces a historical effect that serves as a plausible explanation as to the varying degrees of perceived benefit.

There are other threats to the prognostic power of this study. It would be incorrect to assume that all subjects in the sample described here received the same intervention(s); that is another reason why the efficacy of mental health treatment provided to victims of air disasters could not be determined by this study. Some subjects received group therapy, some received outreach efforts from different organizations, and some worked individually with those in counseling capacities across a wide range of skill level. Also to be considered is the influences brought to this investigation by this author. It would be incorrect to assume that no bias exists on the part of the investigator, no matter how diligent the effort to protect the integrity of data collection and analysis. Again, the object here was not to create an experimental design in which an independent variable was manipulated to bring about change in the dependent variable while controlling for confounding influences.

With this in mind, it is recommended that this attempt to understand how mental health services have been perceived by victims of air disasters be repeated in similar fashion, in an effort to increase the pool of data. It would still be feasible to utilize the constructs presented here in interpreting the more open-ended feedback that would almost certainly be provided. The rationale for doing so would be to take this beyond a preliminary level, and provide to the mental health community at least a modicum of reliable feedback that could better guide their efforts with this population.

Looking at the larger picture of psychological intervention that has taken place to date, it seems that the works cited in this document point to an increasing awareness of the need for well-designed and organized efforts in the future. This is based on the numerous accounts presented here which detail varying degrees of psychological distress after an air crash among several populations. Aspects of this distress can bear a striking resemblance to that which occurs subsequent to other types of disasters and traumas. The articles presented here lend overwhelming support to the value of providing mental health services over not offering such assistance.

Research that seeks to understand and report on trends in how mental health care is received by air disaster victims is virtually nonexistent. It is vastly overshadowed by reports on surveys of the type and intensity of posttraumatic stress symptoms reported by these victims. While this is an important endeavor, the creation and evaluation of treatment protocols specific to air disasters would be the next logical step. This has gradually taken place over the past ten years with the advent of, for example, the Red Cross AIR Teams. Now that organizations such as the Red Cross have action plans that are carried out on a routine basis, they should undergo assessments of whether they are helpful to those they serve. As time goes on, it will become more crucial to demonstrate the effectiveness of these interventions.

The subjects in this study brought their experiences to bear upon the questionnaires, and material relevant to the investigation was obtained. Several similarities were noted in these responses when compared with what others have found in working with disaster survivors. The bitterness and anger that remains after losing a loved one to an accident that is perceived as preventable (as is often the case with technological disasters) surfaces in

these narratives as they have in other investigations of trauma. The members of NADA/F have all decided that coming together to support each other and to become active in the pursuit of greater air safety is preferable to doing nothing, or coping with pain and loss alone. It may even be viewed as more than activism for the sake of promoting change, as some members of this organization may join to help them find a new purpose in going on in life.

Until recently when an individual's or family's life was completely disrupted by an air crash, there was no system in place to assess and tend to the emotional status of victims, both in the short and long term. Now that a system is in place, there remains the possibility of aggravating the trauma through the actions and inactions of mental health professionals which can lead to a significant deterioration in the standard of care.

It is still difficult to discern whether the human service professions are doing what is needed to remedy these grievances. From a vantage point of only a few years since this topic was given significant attention by professionals, it may still be the case that victims of air disasters continue to turn to other avenues to resolve their grief. Examples of this which have been observed here

include deriving support from family and friends. Some may never reveal their pain to anybody and attempt to complete their healing process on their own. Still others may utilize more pathological coping mechanisms such as abusing alcohol and/or drugs.

An unfortunate aspect about commercial aviation is that at the present levels of safety, as long as aircraft continue to fly, there will be the combination of circumstances that result in injuries and fatalities. Many of these injuries will be "psychotraumatic" in that they will involve a mental health crisis precipitated by the sudden onset of painful stimuli. Thus, it is important to develop and maintain effective practices in the same way that emergency medicine diligently attends to physically traumatic injuries. The field of psychology has made significant inroads in organizing its disaster response efforts for this type of situation, and in providing compassionate, respectful treatment in a time of pain, horror, and loss. There is still, however, a great deal of progress to be realized, and further research in this area would be an effective method of documenting such efforts in the future.

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Appendix A-Client Crisis Satisfaction Index & Modifications

All answers will be kept completely anonymous.

Date of incident:_____   Please check one: I survived an air disaster   ___

Airline & Flight #:_____   I lost someone in an air disaster   ___

Did you receive any mental health services after the incident you described above:
        a) Immediately afterwards, up to two weeks   ____
        b) Long term(beyond two weeks)   _____
        c) Both "a" and "b"(from the very beginning through the following months)   ____
        d) Did not receive any psychological services.   ____(Feel free to explain on the next page.)

1. Were the services you received specific to your needs?   Not specific 0….…...10 Very specific
2. How well did the services meet your needs?   Didn't meet needs 0…..10 Completely met needs
3. Did the services meet your expectations? Didn't meet expectations 0…..10 Completely met expectations
4. How clearly were the services explained to you?   Not at all 0……10 Completely explained
5. Did you have enough information to make choices about services? No information 0…10 Complete info
6. Were the procedures to obtain services explained to you?   Not at all 0.…10 Completely explained
7. Did you receive respect from the outreach counselor?   No respect 0…..10 Complete respect
8. Did the outreach worker show concern for your situation?   No concern 0…..10 Complete concern
9. Was the information you provided held confidential?   Not at all 0……10 Completely confidential
10. Were you satisfied with the length of time between   Not at all satisfied 0…..10 Completely
    your request for service and the time you received the service?   Satisfied
11. Did you receive information you requested in a timely manner?   Not received 0……10 Received
                                                           immediately
12. Were services provided at a time that was convenient for you?   Not at all 0…......10 Convenient
13. The services helped me to understand my own feelings.   Not at all 0……10 Completely
14. The services helped me to realize my strengths.   Not at all 0……10 Completely
15. The services helped me to believe in my own abilities.   Not at all 0……10 Completely
16. The services helped me to recognize that my reaction was normal.   Not at all 0……10 Completely
17. The services helped me understand how the disaster impacted my life.   Not at all 0……10 Completely
18. The services helped me to view the disaster in relation to the community.   Not at all 0……10
                                                           Completely
19. The services helped me accept the changes caused by the disaster.   Not at all 0……10 Completely
20. The services helped me to seek other sources of assistance.   Not at all 0……10 Completely
21. The services helped me identify the issues of concern.   Not at all 0……10 Completely
22. The services helped me understand many ways to deal with concerns.   Not at all 0……10 Completely
23. The services helped me develop solutions to my concerns.   Not at all 0……10 Completely
24. The services helped me evaluate the progress of my actions.   Not at all 0……10 Completely
25. The services helped me to view myself as a survivor not a victim.   Not at all 0……10 Completely
26. The services helped me to adjust to this new situation.   Not at all 0……10 Completely
27. The counselor helped me to reach out to others for support.   Not at all 0……10 Completely
28. The counselor was sensitive to my feelings.   Not at all sensitive 0…....10 Completely sensitive
29. Rate the level of kindness the counselor showed you.   Not at all kind 0……10 Always kind
30. The counselor was cooperative.   Not at all cooperative 0……..10 Totally cooperative
31. I felt comfortable expressing my feelings to the counselor.   Not at all comfortable 0…..10 Totally
                                                           comfortable
32. The counselor listened to what I had to say.   Did not listen 0…….10 Listened to all I said
33. I felt free to talk about any and all issues with the counselor.   Not at all 0……10 Talked freely
34. The counselor was aware of available community resources.   Not at all 0……10 Knew every resource
35. The counselor knew how to find information to my questions.   Not at all 0……10 Found information
36. The counselor realized the impact of the disaster on the community. Did not realize 0………10
                                                           Completely understood

37. In general, services educated me about the disaster.   Not at all 0……10 Completely educated me

If you found that the above questions did not adequately address the areas related to your contact(s) with mental health professionals, please feel free to provide any additional comments in your own words below:

_____

_____

_____

_____

_____

_____

Thank you for your time. Again, all responses will be held in the strictest confidence.

Appendix B-Consent Form

"Mental Health Services Provided in the Aftermath of Aviation Disasters"

William C. Rizzo, MA
Consent Form

Principal Investigator: William C. Rizzo, M.A.
>   -Doctoral Candidate in the Institute for Graduate Clinical Psychology, Widener University, Chester, PA

Dissertation Chairperson: Beth Howlett, Ph.D.

1. Purpose: The purpose of this study is to examine the delivery of mental health services to survivors of air disasters as well as bereaved family members.
2. Procedures: The study will be explained by the investigator. Each individual who wishes to participate will be asked to sign an informed consent and fill out a short questionnaire. After questionnaires are distributed, the investigator will leave the room. Finally, to safeguard each participant's privacy, all consent forms and questionnaires will be deposited in separate envelopes instead of handing them back to the investigator.
3. Risks: Possible risks of participation may include loss of time (approximately 10-15 minutes), as well as the rekindling of emotions surrounding the traumatic event.
4. Benefits: The outcome of this investigation may result in insights into whether the efforts of mental health professionals/organizations to assist people in coping with these tragedies are perceived as successful by the consumers of such services. However, there are no expected direct benefits to the participants of this study.
5. Alternatives: There are no alternative procedures in this investigation.
6. Confidentiality: All information collected in this study will be kept strictly confidential, except as may be required by law. If any publication results from this research, you will not be identified by name. Also, collected information will be stored by the investigator until completion of the study, then all questionnaires will be destroyed.
7. Termination of Participation: Participants may withdraw from this study AT ANY TIME and WITHOUT PENALTY.
8. Compensation: There will be no financial or other type of compensation for participating.
9. Questions: All of your questions should be answered to your satisfaction before you consent to participate in this study, but if you have any further questions about the study you may call Mr. William Rizzo at telephone number (610) 676-0981. If you have any questions about the rights of research participants you may call Dr. Barbara Patterson, Chairperson of Widener University's Institutional Review Board at (610) 499-4106.
10. Voluntary Consent: You are free to withdraw or refuse your consent without penalty or consequence.

I voluntarily give my consent to participate in this research study. I understand I will be given a copy of this consent form.

_____   _____
Participant's Name   Date   Investigator's Name   Date

_____   _____
Participant's Signature   Date   Investigator's Signature   Date

Widener University's Institutional Review Board has approved this study.