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AFTERMATH OF A DISASTER: PSYCHOLOGICAL RESPONSE TO THE RUSSELVILLE ARKANSAS MASS MURDER

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FINAL FIELD REPORT -- RUSSELLVILLE, ARKANSAS

Over the Christmas holiday of 1987, a 47 year old man murdered fourteen members of his family in his rural home just outside of Dover, Arkansas (pop. circa 7,000). He buried most of the bodies in shallow graves on his property. His actions not yet discovered, a few days later, on December 28, he appeared in the quiet little nearby town of Russellville, Arkansas (pop. circa 15,000). There, the gunman went on a shooting spree that lasted 35 minutes, as he methodically visited four local businesses and shot individuals he was said to hold a grudge against (along with others who happened to be in his way). Before giving himself up to authorities, he succeeded in fatally wounding two people and leaving four other injured victims in his wake. Media accounts held this event to be one of the biggest mass murders in modern American history.

The gunman was a man said to be a heavy drinker and wife abuser. It was also discovered that he had a long, unstable job history; he had also previously fled from another state to escape charges relating to sexual abuse of his own young daughter. He was a man who was said to be increasingly unhappy prior to the shootings; he had quit his job a few days before, disgruntled by wages and work hours, and he had then unsuccessfully attempted to obtain unemployment benefits. Co-workers said that he was a quiet man who didn't get along well with others and isolated himself, but they had no idea that he was capable of such carnage.

When the gunman appeared at the various businesses and began shooting, eyewitnesses were initially so surprised that they could not even believe it was real. In the quiet town of Russellville in a county that prohibits the use of alcohol, events such as this are practically an anachronism. Many witnesses stated that they initially believed it was a joke, and not until

they saw the "blood pumping out" and people falling down dead did the reality of the situation hit them.

The gunman skipped from one business to the next, shooting those on his list, driving to the next location and taking care of business there. Between each location he changed hats. One woman he killed was a woman he had worked with at one of the businesses, and she had resisted sexual advances he had made toward her, then complained to her boss; the gunman also shot and seriously wounded the boss who now worked at a different location.

Russellville, Arkansas was not prepared for a disaster of this magnitude. All three of the city's police vehicles were called to the scene of the shootings. Each time police headed toward the source of an emergency call reporting a gunman and wounded individuals, new calls in other locations kept coming in before the officers could even arrive at locations of other calls, and the police found themselves in a chase around town. It was not until the gunman had finished shooting everyone on his list (and two other individuals who were in the wrong place at the wrong time) that he was apprehended, when he laid down his guns and asked employees of the last business to call authorities.

The town was left in shock. Individuals reported continued fear and jumpiness even after the gunman was locked away in another county. Initially there seemed no rhyme or reason for the violence or its pattern. Authorities moved to piece together information to help explain the event. Media personnel from across the nation converged on Russellville, splashing stories and reports across television screens and front pages of newspapers across the country. Witnesses interviewed by the media were often angered when they later read or saw what they believed to be absolute misinformation. Many complained of overt sensationalism. Initially anxious to speak with the media

and share their stories, witnesses quickly developed distrust and resentment of anyone remotely resembling media, and refused further comment. It was into this atmosphere that we moved to begin the task of our research.

METHODS

We first learned of the mass murders through media reports. A phone call to a local reporter a few days after the event yielded information that there were perhaps two dozen witnesses, and that the townspeople were a friendly bunch who had been very cooperative in sharing their information with him. He stated that people were easy to reach via listings in the local telephone directory and via their workplaces, and he urged us to come there as soon as possible and start phoning witnesses, offering his assistance if we needed.

The version of the Diagnostic Interview Schedule/Disaster Supplement (DIS/DS) used in studying the Indianapolis-Ramada Inn jet crash disaster was modified slightly to make it pertain specifically to the Russellville situation. Every effort was made to have questions on the Russellville interview parallel those on the Indianapolis interview, in order to allow precise comparison during data analysis.

Upon arriving in Russellville, the research team began by visiting each of the four businesses involved in the shootings, speaking to the business owners to explain the study and invite them to participate. Two of the four owners refused to participate or to permit us to speak to any of their employees or give us names of any clients or customers who were present. Thus without this initial contact there was no way of knowing exactly how many individuals were involved there or who they were. Subjects were often very wary initially, appearing distrustful and vigilant until they were assured of who we were and what our purpose was. At first we were mistaken for reporters or wrongdoers posing as researchers. Once we had gained their trust, owners

of the other two businesses gave us a warm reception and permitted us to approach their employees to invite them to participate in the study.

Individuals who were not available for interview at work were located either through newspaper reports or by their fellow co-workers.

Sample

Within the universe of all employees at the two participating businesses, 15 individuals had been present at the shootings. Eleven of the 15 agreed to participate. As was done in the Indianapols-Ramada Inn jet crash study, it was elected to also interview employees who were absent from the scene of the disaster when it happened, to provide a comparison group. Of ten individuals in this "off-site" group, seven agreed to participate. Overall, 18 individuals out of the possible 25 participated in the study, giving an overall refusal rate of 28% (27% of eyewitnesses and 30% of those not present).

Most persons interviewed said they agreed to participate because they wanted to be of help in a research effort which they thought might benefit others who would go through a similar disaster in the future. Other individuals said they felt that they needed to talk about their experience or that they saw it was an opportunity to obtain help personally.

Among the "on-site" individuals and business owners who refused, several indicated that it was too upsetting to talk about the disaster experience. Others expressed concern that in spite of all reassurances about confidentiality, a leak of information might somehow impair judicial proceedings and result in the gunman not getting the conviction or sentence they felt he deserved. These individuals indicated that they would be more willing to talk after the trial. One refuser indicated that he believed we were reporters in disguise; another stated that he didn't want to be "studied" or be a part of

any research. Refusers in the "off-site" group were often heavily involved in overwhelming tasks in the wake of the disaster and could not further extend themselves to help the research. One subject was simply too busy with routine demands of his work schedule.

Instruments

Subjects were interviewed about their psychiatric and social status using a modified version of the Diagnostic Interview Schedule/Disaster Supplement (DIS/DS) (Robins and Smith 1983). This interview was designed for the ECA Hazards study funded by NIMH (Smith et al. 1986) and has been used by investigators in several recent disaster studies. It elicits information about the disaster experience and the individuals' perceptions of the event, use of formal and informal support systems, behavioral response to the traumatic event, and 15 DSM-III diagnoses selected for their potential relevance to the disaster experience. In this study only the following diagnostic categories were included: post-traumatic stress disorder, depression, somatization disorder, generalized anxiety disorder, panic disorder, phobic disorders, antisocial personality disorder (adult component), alcohol abuse/dependence, and drug abuse/dependence.

For each disorder that was ascertained to have occurred, age of onset and age at last symptom were obtained, thus providing lifetime as well as current psychiatric status. Onset and recency for each positive symptom of the relevant diagnoses were also obtained. Thus information was available as to the presence or absence of each symptom during the interval between the disaster and the interview, and prior to the disaster.

The disaster interview also contained a number of other measures that might be sensitive to changes in mental health. These included use of health services and psychoactive drugs, health and disability status, role function,

and social support. In addition to these questions, all of which were part of the ECA interview, the disaster section explored the disaster experience and its meaning for the respondents. All participants were asked to evaluate news coverage of the disaster, on whom they blamed the disaster, and whether other stressful life events had occurred in the last year.

Subjects were also asked to complete two self-administered forms: the Impact of Events Scale (Horowitz et al. 1979), a 15-item questionnaire which measures current subjective distress related to experiencing a stressful life event; and the Tridimensional Personality Questionnaire (Cloninger 1986).

The majority of interviews were conducted in-person and were completed at four to six weeks after the disaster event. For various reasons, a few interviews could not be scheduled in person and were completed by telephone. Interviews were conducted by one of the authors (CSN) and two fourth-year psychiatry residents. All subjects were offered $10.00 for participating. The interview took on average approximately two hours to administer.

Data Analysis

The "on-site" group of 11 subjects was defined as those employees who were present at the scene of the murders. The "off-site" group was composed of employees of the same businesses who were not present at work at the time of the disaster.

Because of the limited size of the study sample, tests of significance were not performed. The results will be presented in a descriptive fashion.

RESULTS

Demographic information

The sample was 55% female and 100% Caucasian, with a mean age of 37.6 years (Table 1). The off-site group was over-represented by females and was older (mean age, 44.3 years) than the on-site group (33.4 years). The

majority of subjects were in the 25-44 year age range. Two-thirds of the sample was married, and this ratio held for both subgroups. Most subjects had completed high school or had obtained a G.E.D. Almost three-quarters of the sample had attended college, and overall mean years of education was 13.5. The on-site group was better-educated, reflected in their higher rates of high school/ G.E.D. completion (100% compared to 91% off-site) and college attendance (81% compared to 47% off-site), as well as greater mean years of education (13.7 vs. 13.1 off-site).

Subjective distress and attribution of blame

Respondents were asked how upset they had been after the shootings, and how much they felt they had been harmed. Perceived degree of upset (Table 2) was scored high ("very upset") by almost three-quarters of the respondents, especially those in the on-site group. The majority of subjects denied that the disaster had caused them a great deal of harm; not one of the off-site subjects endorsed this idea. Over half felt that they had completely recovered, and 100% of those in the off-site group reported full recovery. All interviewed survivors reported that they had at least partially recovered.

Respondents were also asked if they thought that the victims or any other individuals, industries, or government agencies were in any way to blame. Respondents universally blamed the gunman. One subject also felt that the level of security at work was insufficient, and one subject placed additional blame on law authorities in another state for not having apprehended the gunman on past felony charges.

Psychiatric Impact

As shown in Table 3, about one-fifth of the subjects met DSM-III criteria for at least one of four psychiatric diagnoses [including post-traumatic stress disorder (PTSD), alcohol abuse/dependence, major depression, and

generalized anxiety disorder] following the disaster. Half of these cases occurred in subjects who had no prior history of the same diagnosis, i.e., incident cases. Although on-site subjects had about twice the prevalence of post-disaster diagnoses compared to off-site subjects, examination of only incident cases does not show this same pattern -- in fact, off-site subjects had a higher proportion of new-onset disorders. Thus, appearance of new post-disaster psychiatric disorders did not appear to vary with degree of exposure to the disaster.

Symptoms of PTSD were among the most common of symptoms reported (Table 4). Three-fifths of the sample acknowledged experiencing one or more symptoms of PTSD, averaging 2.11 symptoms per subject. PTSD symptoms did appear in a dose-response relationship to degree of exposure to the disaster with on-site victims averaging 3.00 symptoms per subject, compared to less than one symptom per subject in the off-site group. Four-fifths of on-site subjects reported having one or more PTSD symptoms, compared to less than one-third of the off-site group.

The two PTSD symptoms most frequently endorsed were jumpiness and insomnia, by almost half the subjects for each. Almost three-quarters of the on-site group described feeling jumpy or easily startled after the disaster, while none of the off-site subjects endorsed this symptom. Other dose-related symptoms were difficulty concentrating, insomnia, and recurrent dreams/ intrusive recollections. Over one-third of the sample reported experiencing recurrent dreams/intrusive recollections. No subjects reported survivor guilt.

Almost one out of five on-site victims (two subjects) met DSM-III criteria for PTSD after the disaster, while no off-site subjects met criteria (Table 5). These two cases were both incident cases (Table 6). One on-site

victim met criteria for a past PTSD episode, which did not recur after the disaster.

Although the interview was not designed to make DSM-IIIR diagnoses, reported symptoms were fit as closely as possible into DSM-IIIR criteria for PTSD and the data were re-analyzed. No subjects met DSM-IIIR criteria for PTSD, largely because of a general lack of endorsement of symptoms of loss of interest, detachment from others, numbness, and amnesia. Although it is recognized that the DSM-III/DSM-IIIR comparison is not perfect due to the different methodologies employed to make the diagnoses, it at least allows a rough comparison of the two sets of PTSD criteria in the same population.

There were no post-disaster cases of alcohol abuse/dependence in either on-site or off-site subjects (Table 6), although two on-site subjects admitted to symptoms consistent with alcohol abuse (without dependence) in the past. It is possible that the location of the town of Russellville in the "Bible belt" and in a dry county may have produced sufficient cultural influence to limit the development of alcohol disorders in this population.

Two on-site subjects and one off-site subject were suffering from depression following the disaster (Table 6); two of these were incident cases (one in each subgroup).

There were no cases of generalized anxiety disorder following the disaster (Table 6) despite a pre-disaster history of three cases in the on-site group and one in the off-site group.

All subjects reported feeling at least some subjective degree of upset after the disaster (Table 7). Tendency to meet criteria for a psychiatric diagnosis did not correlate with how upset subjects reported they felt. Despite the frequent admission of "very upset" feelings, about three-quarters denied much harm to themselves by the disaster, and tendency to have a post-

disaster psychiatric diagnosis did not correlate with degree of perceived harm. Perceived degree of recovery did, however, predict the likelihood of meeting criteria for a psychiatric diagnosis, and those who felt fully recovered were less likely to have developed a disorder. No subjects reported failure to recover at least in part. One off-site subject who reported full recovery did meet criteria for a post-disaster diagnosis of depression (incident case).

Predictors of post-disaster psychiatric status. Prior to the shootings, almost three-fourths of the on-site subjects had experienced a diagnosable psychiatric disaster, while only one off-site subject (14%) had, a 50% rate overall (not shown). Major depression and generalized anxiety disorder contributed equally to comprise the majority of these pre-disaster cases (three cases each). It is possible that disaster-related symptoms similar to those contributing to these two diagnoses sparked memories of depression and anxious symptoms experienced in the past, symptoms not recalled by off-site victims.

When the analysis was expanded to include post-disaster disorders in calculation of rates of lifetime diagnosis, the overall percentage of respondents with one or more lifetime diagnoses rose to 61% overall (82% of on-site and 29% of off-site subjects). The 50% pre-disaster and 61% lifetime prevalence rates of psychiatric disorders in this sample is considerably higher than the 29-38% lifetime prevalence rate of one or more of fifteen psychiatric disorders reported in the findings of the Epidemiologic Catchment Area project, a survey assessing the prevalence of mental disorders in the general population (Robins et al. 1984).

Only two (22%) of the nine subjects with a pre-disaster psychiatric diagnosis met criteria for a diagnosis after the disaster (Table 8). The

other two subjects with a post-disaster diagnosis had no prior history of symptoms consistent with a psychiatric diagnosis. Thus, post-disaster disorders appeared as frequently in subjects with prior psychopathology as they did in subjects without.

Prior to the disaster, three individuals (17%) had received psychiatric treatment, and these three individuals were all on-site subjects. One of these had required hospitalization. Only one individual, in the on-site group, was receiving psychiatric care after the disaster (Table 9).

Almost two-thirds of the on-site victims took advantage of the group or individual counseling offered after the murders, while less than half of the off-site group took part. Most of the subjects who received the counseling did not meet criteria for a post-disaster psychiatric disorder.

Coping. Victims almost universally coped by turning to family or friends for support, especially in the on-site group (Table 10). One-third received additional support from a doctor or counselor, especially in the on-site group, in which almost half sought this kind of assistance. Very few dependended on medication or alcohol to help them cope, and all those who did were under the care of a doctor or counselor.

CONCLUSIONS

The event of the Russellville mass murders was marked by considerable horror and terror, elements thought to be associated with high degrees of upset in survivors. In a sense, it was a particular shock to the historically peaceful community in which it occurred, since events of this nature are almost anachronistic to small close-knit communities like Russellville in rural, alcohol-prohibiting, "Bible'belt" settings. The anachronistic nature of the shootings in this town coupled with the total unexpectedness of the event, may have served to diminish the impact of the horror and terror of the

immediate disaster experience. In fact, the victims frequently reported thinking it wasn't real or it was a joke until it was over. Oddly, many of these subjects were the same ones reporting persistent symptoms of jumpiness, hypervigilence, and persistent dreams or recollections. Further, reports of PTSD symptoms occurred in a dose-response relationship to the degree of exposure to the disaster, being far more common in on-site victims than in those off-site.

An important element that was absent with this disaster was that of secondary complications. This event did not result in loss of jobs or homes, or death of close family members for the survivors. Also, the small community rallied immediately to provide support for the victims, which may have further reduced the impact of the disaster.

In general, the on-site victims felt more upset and less recovered than the off-site group; which generally described themselves as recovered. Post-disaster psychiatric disorders appeared to show a dose-response relationship to the degree of exposure to the disaster, but when only incident cases were considered, this dose response relationship vanished. It turned out that almost three-quarters of on-site subjects had a pre-disaster history of psychiatric illness, and none of the off-site subjects had such a history. Thus, the on-site and off-site victims differed from the start on a variable known to correlate with post-disaster adjustment.

Finally, this disaster represented a willful human act, and considerable emotion was visible throughout the community regarding the disposition of the gunman. From this single event, it is not possible to tease out which of the above characteristics of this particular disaster contribute to the various human responses to it. Comparison of data with that from other kinds of disasters in other settings may help clarify these issues. Within this

sample, numbers are too small to make statistical comparisons of responses between the on-site and off-site groups. Addition of data from other disasters may help provide the power to sort out how much the actual experience of the disaster event contributes to outcome, versus the contribution of secondary consequences of the event.

Table 1. Demographics

	On-site (N=11)	Off-site (N=7)	All (N=18)
Sex			
Male	5 (45%)	5 (71%)	10 (56%)
Female	6 (55%)	2 (29%)	8 (44%)
Race			
White	11 (100%)	7 (100%)	18 (100%)
Black	0	0	0
Age groups			
<25	2 (18%)	1 (14%)	3 (17%)
25-44	9 (81%)	4 (36%)	13 (72%)
45-64	0	1 (14%)	1 (6%)
> 64		1 (14%)	1 (6%)
Mean age (years)	33.4	44.3	37.6
Marital Status			
Married	7 (64%)	5 (71%)	12 (67%)
Divorced/ Separated	3 (27%)	1 (14%)	4 (22%)
Single	1 (9%)	0	1 (6%)
Widowed	0	1 (14%)	1 (6%)
Education			
HS grad or GED	11 (100%)	10 (91%)	17 (94%)
Some college	9 (81%)	4 (57%)	13 (72%)
Mean (Years)	13.7	13.1	13.5

Table 2. Perceived upset, harm, and degree of recovery

	On-site (N=11)	Off-site (N=7)	All (N=18)
Upset			
Very	9 (81%)	4 (57%)	13 (72%)
Somewhat	2 (18%)	3 (43%)	5 (28%)
Not very	0	0	0
No info.	0		
Harm			
Great deal	4 (36%)	0	4 (22%)
Not much	7 (64%)	7 (100%)	14 (78%)
Recovery			
Full	3 (27%)	7 (100%)	10 (56%)
Partial	8 (73%)	0	8 (44%)
None	0	0	0

Table 3. Subjects with one or more psychiatric diagnoses* after the disaster (prevalence versus incidence)

Subjects with one or more diagnosis*	On-Site (N=17)	Off-Site (N=12)	All (N=46)
All cases after disaster (prevalence)	3 (27%)	1 (14%)	4 (22%)
New cases since disaster (incidence)	1 (9%)	1 (14%)	2 (11%)

* Includes PTSD (by DSM-III criteria), alcohol abuse/dependence, depression, and generalized anxiety disorder.

Table 4. PTSD Symptoms

PTSD Symptom	On-site (N=11)	Off-site (N=7)	All (N=18)
dreams/ recollection	5 (45%)	2 (29%)	7 (39%)
happening again	1 (9%)	0	1 (6%)
numbness	2 (18%)	0	2 (11%)
jumpy	8 (73%)	0	8 (44%)
insomnia	6 (55%)	2 (29%)	8 (44%)
survivor guilt	0	0	0
concentration	5 (45%)	0	5 (28%)
avoid reminders	2 (18%)	0	2 (11%)
reminders make worse	4 (36%)	1 (14%)	5 (28%)
mean number of symptoms	3.00	0.71	2.11
subjects with $\geq$ 1 symptom	9 (81%)	2 (29%)	11 (61%)

Table 5. Post-disaster rates of PTSD diagnosis by DSM-III versus DSM-IIIR criteria

Rates of PTSD Diagnosis	On-site (N=11)	Off-site (N=7)	All (N=18)
By DSM-III criteria	2 (18%)	0	2 (11%)
By DSM-IIIR criteria	0	0	0

Table 6. Rates of Psychiatric Diagnosis

All cases since disaster (Prevalence)

Diagnosis	On-site (N=11)	Off-site (N=7)	All (N=18)
PTSD*	2 (18%)	0	2 (11%)
Alcohol abuse/ dependence	0	0	0
Depression	2 (18%)	1 (14%)	3 (17%)
Generalized anxiety disorder	0	0	0

New Cases Since Disaster (Incidence)

	On-site (N=11)	Off-site (N=7)	All (N=18)
PTSD*	2 (18%)	0	2 (11%)
Alcohol abuse/ dependence	0	0	0
Depression	1 (9%)	1 (14%)	2 (11%)
Generalized anxiety disorder	0	0	0

Diagnosis Present Before and After Disaster (Persistence)

	On-site (N=11)	Off-site (N=7)	All (N=18)
PTSD*	0	0	0
Alcohol abuse/ dependence	0	0	0(9%)
Depression	1 (9%)	0	1 (6%)
Generalized anxiety disorder	0	0	0

*Diagnosis made by DSM-III criteria.

Table 7. Relationship of number of post-disaster diagnoses* to subjective reports of upset, harm and recovery

Upset	No diagnosis*	>1 diagnosis*
Not	0	0
Somewhat	4 (29%)	1 (25%)
Very	10 (71%)	3 (75%)
Total	14 (100%)	4 (100%)

Harm	No diagnosis*	>1 diagnosis*
Not much	11 (79%)	3 (75%)
Great deal	3 (21%0	1 (25%)
Total	14 (100%)	4 (100%)

Recovery	No diagnosis*	>1 diagnosis*
Full	9 (64%)	1 (25%)
Partial	5 (36%)	3 (75%)
None	0	0
Total	14 (100%)	4 (100%)

* includes PTSD (by DSM-III criteria), major depression, generalized anxiety disorder, and alcohol abuse/dependence.

Table 8. Current psychiatric diagnoses* versus prior psychiatric diagnoses*

		# prior diagnoses*		
All				
		0	≥1	
# current diagnoses*	0	7	7	14
	≥1	2	2	4
		9	9	18
On-site				
# current diagnoses*	0	2	6	8
	≥1	1	2	3
		3	8	11
Off-site				
# current diagnoses*	0	5	1	6
	≥1	1	0	1
		6	1	7

* includes PTSD (by DSM-III criteria), depression, generalized anxiety disorder, and alcohol abuse/dependence.

Table 9. Treatment

Psychiatric Treatment	On-site (N=11)	Off-site (N=7)	All (N=18)
Pre-disaster treatment	3 (27%)	0	3 (17%)
Pre-disaster hospitalization	1 (9%)	0	1 (6%)
Current treatment*	1 (9%)	0	1 (6%)

* Refers to treatment by psychiatrist or other mental health professional.

Table 10. Coping

Method of Coping	On-site (N=11)	Off-site (N=7)	All (N=18)
Friends/Family	10 (91%)	5 (71%)	15 (83%)
Medication	2 (18%)	0	2 (11%)
Alcohol	1 (9%)	0	1 (6%)
Doctor*/Counselor	5 (45%)	1 (14%)	6 (33%)
Other	8 (73%)	1 (14%)	9 (50%)
Medication, alcohol, or doctor/counselor	5 (45%)	1 (14%)	6 (33%)

* Doctor refers to medical doctor or other health professional or counselor.