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RESIDENTIAL LOSS AND DISPLACEMENT AMONG SURVIVORS OF
THE 1993 ALTADENA FIRE

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By

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**RESIDENTIAL LOSS AND DISPLACEMENT AMONG SURVIVORS OF
THE 1993 ALTADENA FIRE**

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The Event

For two weeks in the fall of 1993, wildfires devastated numerous Southern California hillside and canyon communities. The worst of the fires occurred on October 27, 1993 in the foothills of the San Gabriel Mountains northeast of Los Angeles where homes are built on rural landscapes near brush lands with a history of fire. By autumn, these areas were dense with foliage, caused by heavy spring rains, that were dried out by months of summer drought. More than 2100 firefighters were mobilized to subdue the firestorm in record-breaking 90 degree temperatures. They tried dropping water and fire retardant from helicopters to halt its spread but lost control of the blaze which was being fanned by 60 mile an hour Santa Ana winds from the northeast. Residents stood on their roofs with garden hoses and even pumped water from their swimming pools, but all eventually had to flee their neighborhoods.

The fires destroyed 5700 acres and 121 homes in the communities of Altadena and Sierra Madre. Twenty-nine firefighters and 9 residents sustained minor injuries. Over 2500 residents from 500 homes were evacuated to four shelters in the Greater Pasadena area. When they returned to their neighborhoods, they found only "the blackened pile of ash and melted, twisted rubble that was their home and possessions." They faced the task of reconstruction without the security of their homes and cherished personal objects, and lacking the familiar routines that had comprised their everyday lives.

The Study

We conducted an interview study of 24 individuals residing in the Altadena area who either lost their homes or whose homes were threatened by the fire but were not totally destroyed. We explored the following issues: 1) the effect of loss, damage and threatened loss on the psychological state of fire victims, 2) the effect of fire preparedness on victim response, and 3) the impact of the media on coping behavior.

Study Instruments

The major instruments used in this study were: 1. The Beck Depression Scale (Beck et al., 1961); 2. The Impact of Event Scale (Horowitz et al., 1979); 3. The Wichita Falls Victim Interview Schedule (Bolin, 1980); 4. The Whittier Narrows Parent-Child Interview Schedule (Maida et al., 1993); and, 5. The Tug Fork Survey (Motz et al., 1980).

Development of the Sample

We developed a sample through the State of California Office of Emergency Services and local government agencies. We also developed a press release which was sent to the Los Angeles Times, Pasadena Star-News and other local print and electronic media. We mailed and distributed notices soliciting study respondents to the Los Angeles County Fire Department, the Red Cross, the DAC and community homeowners associations in the fire zone.

Interviewer Training and Data Collection

We selected the interviewers, and conducted an orientation at the offices of the City of Pasadena Health Department. The interviews were conducted by three trained interviewers. Interviews were conducted during January, February and March, a period which included the anticipated onset of more severe post-traumatic stress symptoms. Many of the interviews were conducted at the Pasadena Health Department offices; and others were held at the respondents' temporary or permanent residences.

Results

Sociodemographic Characteristics

The study population consisted of 24 individuals, most of whom responded to a mailing. Others were contacted through referral by those interviewed. The low response in recruiting the sample is consistent with the experience reported by researchers conducting similar studies.

Twenty-one of the respondents were Caucasian, one was African-American, and two were Asian/Pacific Islanders; the average age was 52. We interviewed 15 women and 9 men. The educational level of this group averaged 15.2 years; two completed high school, 8 had some college, 7 completed college, and 5 had advanced work.

Households averaged 2.3 members. The employment status of the sample consisted of 19 (79%) employed persons. Four respondents were never married, 17 were married, and 3 were divorced. Four respondents were living alone, 13 families had 2 members, 7 families had between 3 and 5 members. The sample represents a residentially stable population with a mean length of residence in the community of 15.2 years, and 12.6 years in the home that the respondent lived in at the time of the fire. Nineteen (79%) were owners of the residential units involved in the fire; 4 (17%) were renters, and 1 (4%) "other."

The income level of the respondents was: under \$30,000 (4%), \$30,000-\$40,000 (12.5%), \$40,000-\$50,000 (4%), \$50,000-\$70,000 (21%), \$70,000-\$80,000 (21%), \$80,000-\$100,000 (12.5%), \$100,000+ (25%).

Sixty-three percent of the sample were Protestant, 12% were Jewish, 8% were Catholic, and 17% either practiced another form of religion or were not religiously affiliated. Twenty-nine percent of the respondents reported that religion was very important, 38% considered it somewhat important, and 33% attributed little or no importance to it.

Depressive Symptoms

Table I presents a rank order of depressive symptoms as measured by the Beck Depression Scale. The average score on the Depression Scale was .54 (sd = .58); the range was 0 to 2.32.

Table I

Symptoms	Average
Feeling blue	1.50
Feeling tense or keyed up	1.46
Nervousness or shakiness inside	1.04
Feeling so restless you couldn't sit still	.96
Feeling no interest in things	.92
Feeling lonely	.75
Feeling hopeless about the future	.67
Feeling fearful	.54
Feelings of worthlessness	.42
Faintness or dizziness	.33
Pains in heart or chest	.29
Nausea or upset stomach	.29
Trouble getting your breath	.29
Being suddenly scared for no reason	.25
Feeling weak in parts of your body	.21
Spells of terror or panic	.21
Thoughts of ending your life	.08
Hot or cold spells	.08
Numbness or tingling in part of your body	.04

The Impact of Event Scale

Table II presents a rank ordering of mean scores for the Impact of Event Scale for the respondents.

The instrument is scored on a Likert Scale with "rarely" weighted 1, and "often" weighted 4. The mean score on the Impact of Events Scale for this sample was 1.90 (sd = .61); range 1.07 to 3.4.

Table II

Rank ordering of mean scores for Impact of Event Scale Items ($N = 24$)

Item	Average
Any reminder brings back feelings about it	2.71
Other things keep making me think about it	2.58
Pictures of it pop into my mind	2.50
I think about it when I don't mean to	2.42
I have waves of strong feelings about it	2.08
My feelings about it are kind of numb	2.00
I have dreams about it	1.87
I am aware that I still have a lot of feelings about it, but don't deal with them	1.79
I have trouble falling and staying asleep	1.79
I avoid letting myself get upset, even when I think about it or am reminded of it	1.75
I try not to think about it	1.58
I feel as if it hadn't happened or it wasn't real	1.50
I try to remove it from my memory	1.38
I try not to talk about it	1.33
I stay away from reminders of it	1.25

Selected Responses to Additional Questions

Additional findings pertaining to selected items from the questionnaire were the following.

Personal and Household Harm

Twenty-two (92%) of the respondents reported that their homes were damaged as a result of the fire. Of those damaged, 18 (76%) homes were reported completely destroyed, 1(5%) was severely damaged, and 3 (14%) reported "a little damage." Mild injuries were reported by 3 respondents, 2 to the respondents themselves, and 1 to the adult partner of the respondent.

Residential Displacement

Twenty-three (96%) of the respondents were forced to evacuate their homes; 10 stayed by themselves, 8 with relatives, 4 with friends, and 1 took refuge in a church. At the time of their interviews, 19 (79%) of the respondents were still not living in their pre-fire homes. Twenty-two (92%) of the respondents had to take time off from work or school because of the fire.

Attribution of Blame

Blame fell into two major categories: uncontrollable, unpredictable natural causes; and preventable human cause, such as the community and its fire-fighting resources which were deemed inadequate. Thus, 12 blamed natural causes while 11 blamed a homeless transient who had been identified as the possible inadvertent cause. In addition, 6 respondents blamed the fire department, 4 blamed low water pressure and 2 blamed their neighbors for their failure to clean up the brush around their houses. Numbers will add to more than 24 because some respondents attributed blame to more than one cause.

Firefighter Effectiveness

Fewer than half (41%) of the respondents felt dissatisfied with the firefighters' efforts to combat the fire, while the rest (59%) felt they did a commendable job under very difficult conditions. In response to a question about the effectiveness of firefighters' efforts against the fire, 7 (29%) of the respondents stated that they were very effective, 3 (12%) somewhat effective, 3 (12%) fairly ineffective, and 11 (46%) very ineffective. Twelve (50%) respondents stated that decisions or actions of the firefighters made the damage worse, 10 (42%) stated that firefighters were not responsible for the extent of the damage to their homes, and 2 (8%) had no opinion.

Fire Protection Efforts

The residents in these hillside communities knew from experience and from information disseminated to them that they were living in a high-risk fire area. When asked to describe what measures they themselves had taken to protect their house and property prior to the fire, 16 (67%) reported they had installed fire-resistant or non-combustible roofing materials, 16 (67%) used stucco or brick exterior or installed fire-retarding undersiding for wood exterior, 14 (58%) kept 30 feet around the home clear of highly flammable vegetation, 3 (12%) eliminated roof eaves, 3 (12%) used

dual-panel windows and sliding doors or shutters, 2 (8%) enclosed the undersides of balconies and decks on slopes with fire-retardant materials, and 2 (8%) installed indoor sprinklers.

At the time of the fire, 13 (54%) reported they used garden hoses, sprinklers and pool water in an attempt to prevent loss or damage to their homes, 3 (12%) raked and removed dry leaves near their homes and 10 (42%) did nothing at all. As some respondents reported taking more than one action, results total more than 100%.

Most respondents (two-thirds) felt they had done as much as possible to prevent the damage or loss experienced. When asked whether anyone else could have done anything to keep the fire from doing that much damage, 6 (25%) of the respondents said "yes," 16 (67%) said "no," and 2 (8%) had no opinion.

Sources of Information

Respondents reported a number of sources from which they gained information about the fire. Thirteen (54%) mentioned neighbors, 10 (42%) first-hand experience, 5 (21%) friends, 4 (17%) relatives, 4 (17%) television, 3(12%) radio, and 2 (8%) newspapers. Numbers will add to more than 100% because some respondents mentioned more than one source.

Media Coverage

In response to a question about how media reported the event, 16 (67%) felt the media was sympathetic to the victims, 3 (12%) thought the media was critical, and 5 (21%) had no opinion.

Residential Attachment

Respondents reported a mean length of residence in the community of 15.2 years, and 12.6 years in the home that they lived in at the time of the fire. When asked about their satisfaction with their neighborhood, 19 (79%) of the respondents were very satisfied, 4 (17%) somewhat satisfied and 1 (4%) not satisfied with living in the neighborhood. When asked how they would feel if they were forced to leave their neighborhood, 16 (67%) of the respondents would very much miss the neighborhood, 4 (17%) would miss it somewhat, 3 (12%) not very much, and 1 (4%) not at all.

Before the fire, 7 (29%) of the respondents had considered relocating from the community. After the fire, 8 (33%) would consider leaving if they could find a home in another location where there was a lower risk of disasters. Those wanting to remain in the community stated that they were

particularly attracted to the natural surroundings (71%) and liked the neighborhood or community itself (46%). Because some respondents gave more than one reason for their residential satisfaction, responses total more than 100%.

Eighteen (75%) of the respondents reported having been friendly with their neighbors in the past. Fourteen (58%) stated that their neighbors had been helpful at the time of the fire. Neighbors provided actual assistance at the time of the fire itself (29%), and material help (42%) and emotional support (29%) in the aftermath. Some respondents reported receiving more than one form of support, therefore results total more than 100%.

When asked whether they had discussed with their families the possibility of leaving Southern California because of the threat of disasters, 9 (38%) of those interviewed said they had.

When asked their opinion regarding the likelihood of another major fire striking their community in the next few months, 23 (96%) felt it was very unlikely, with 8 of these respondents adding that "there is nothing left to burn."

Preparedness

When asked to evaluate their own level of preparedness to deal with the fire, 7 (29%) of the respondents reported being well-prepared, 6 (25%) somewhat prepared, 4(17%) fairly unprepared, and 7(29%) very unprepared.

When asked to evaluate their neighbors' level of preparedness, 6 (25%) stated that they were somewhat prepared, 7 (29%) fairly unprepared, 9 (38%) very unprepared, and 2 (8%) offered no opinion.

When asked to evaluate the level of preparedness of public officials and governmental agencies, 8 (33%) stated that they were well-prepared, 7 (29%) somewhat prepared, 6 (25%) fairly unprepared, and 3 (13%) very unprepared.

Knowledge of Help and Help-Seeking

Most respondents were aware of the many community resources offering information and assistance to fire victims. The following services were most often identified: The Red Cross (71%), Disaster Assistance Center (54%), municipal services (25%), counseling (17%), housing assistance

(17%). In addition, respondents mentioned 11 different non-governmental resources and 7 different state and federal governmental resources for fire victims.

Help Obtained

Most respondents indicated that they had obtained assistance from the following disaster services: The Red Cross (54%), non-governmental services (54%), Disaster Assistance Center (38%), state and federal government services (38%), municipal services (8%), counseling (8%), and housing assistance (4%). When asked their opinion regarding what other services were needed, 8 (33%) felt they would have liked to see more immediate help from municipal service agencies than was offered during the fire, 6 (25%) felt that nothing more was required, 10 (42%) offered no opinion.

Nearly all (96%) of those interviewed reported talking about their feelings about the fire. Their confidants were family members, friends, neighbors, co-workers, church members, ministers and even news reporters. Four out of five (83%) indicated that talking about their feelings was helpful to them. None of the respondents or members of their immediate families reported that they had sought formal psychological counseling as a result of the fire.

Comparison of Subjects by Exposure to the Event

Two groups were formed from our sample on the basis of exposure to the event, namely those who were in the fire area when the fire occurred and who witnessed or were involved in fighting the fire, 19 people (79%), and those who were out of the area, 5 people (21%). The latter, however, saw and read about the fire in the media. As confirmed by Fisher's Exact Test, those who were physically exposed and were not physically exposed to the fire did not differ demographically in such factors as number of family members, education, marital status, income, ethnicity, gender, or current employment.

Analysis of variance was used to compare the two groups on the Beck Depression Inventory (emotional distress) and on the Impact of Event Scale (stress reactions). No significant mean differences were found for either scale. Mean differences between the two group were further tested on the subscales of The Impact of Event measure, Intrusive Thinking (7 items) and Avoidance (8 items). Again, no significant mean differences were found.

Comparison of Subjects by Extent of Loss of Residence

The entire sample was again divided into two groups on the basis of loss of residence and compared for significant differences in selected variables. The first group was comprised of the 19 individuals who had suffered complete (18) or severe (1) destruction to their home, while the second group of 5 individuals had experienced only minor (2) or no (3) damage. While demographically there was a significant difference in ethnicity for the group that suffered loss versus the group that did not suffer loss (Fisher's Exact Probability = .005), none of the three non-Caucasian respondents suffered complete or severe loss of home. Ethnicity itself was unrelated to either the Impact of Event Scale or the Beck Depression Scale.

Comparison of the means on the Beck Depression Scale for the group who did and the group who did not suffer complete or severe damage to their homes yielded no significant mean differences. In fact, the 19 people who suffered loss of home had a slightly lower average depression score than the 5 who did not suffer loss of home. Comparison of means of the two groups for significant differences on the overall Impact of Event scale and on its Avoidance and Intrusive Thinking subscales was carried out using analysis of variance. No significant mean differences were found on the overall scale nor on either of the two subscales. However, Levene's test for variances revealed a significant difference in variances on the Avoidance subscale, with those who suffered losses showing more variability in their scores. When this difference was considered using the Welch test, a significant mean difference was found. The loss group showed more variability as well as a slightly higher mean score on the Avoidance subscale ($N = 1.7$) than those who did not suffer loss ($N = 1.2$).

Discussion

Interpretation of the results of this empirical investigation are limited to this small sample of the total population affected by the firestorms in Southern California in the fall of 1993. To begin with, it is very small, with only 24 of more than 2500 residents whose homes were lost or severely damaged; and next, it is made up of residents who went out of their way to volunteer their time and went to some trouble to arrange their interviews. Thus, they were highly motivated and highly cooperative. The sociodemographic data indicate that our sample is relatively upper middle-class and above, with almost 80% earning \$50,000 and up, and educationally, with over 75% indicating at least

some college, and 50% reporting completing college and beyond. Also, most of the residents (79%) owned their own homes. These sociodemographic characteristics make it difficult to compare our results with those of other studies investigating similar psychosocial aspects of disasters but with much different sociodemographic characteristics. Comparisons with other studies are therefore made cautiously, with awareness of the possible contributions to the results of the differences in the population samples studied.

One striking difference is in the relatively low level of emotional and stress reactions in our sample compared with the levels reported in other similar studies. The average score of less than one (.54) on the Beck Depression Scale means that the respondents in this study in general reported most of the symptoms as absent or infrequently experienced. The range of the mean scores for each item extends only to 2.32, which indicates that relatively few respondents felt a recognizable amount of some of the individual symptoms that make up the syndrome of depression. A glance at those items with the highest mean scores indicates the most commonly reported feelings were of excitement, sadness and loss, feelings that are quite normal and to be expected in reacting to a catastrophe. Further supporting the conclusion that severe emotional distress was limited among our respondents is the fact that the lowest mean scores on any of the individual items of the Beck scale were those indicating possible psychopathology or severe depressive feelings, such as thoughts of suicide, spells of terror, or vague bodily feelings of numbness or tingling. These results of our study are in marked contrast with those reported by other investigators (Maida et al., 1989; Richard, 1974; Milne, 1977; Bolin, 1982), who have described increased levels of sleep disturbances, jumpiness, loss of appetite, and general lethargy in their sample studies.

Similarly, minimal stress reactions were reported by our sample. The Impact of Event Scale mean score of 1.90 indicates that, on the average, the respondents reported "rarely" being disturbed by memories or feelings about the event or of trying to avoid recollections of it. The rankings of individual reactions indicate that while intrusive thoughts and feelings were most commonly experienced, they still occurred only infrequently on average, while the least common reactions were avoidance maneuvers, such as trying not to talk about the fire, trying to remove it from their memories, or trying to stay away from reminders of the event.

Many of the items in the Impact of Event Scale are similar to symptoms describing Post-Traumatic Stress Disorder (PTSD). Other studies of disasters have reported that PTSD was common in victims of disasters (Richard, 1974; Milne, 1977; Bolin, 1982). Our respondents did not report such reactions as jumpiness, loss of appetite, general lethargy or trouble concentrating. One specific symptom illustrates clearly the difference in reaction of the different populations studied. In a study of the reactions of victims of the Baldwin Hills fire which destroyed 50 homes in the Los Angeles in July, 1985, the dominant symptoms reported were sleep disturbances (also reported by Price, 1978; Flynn and Chalmers, 1980; Bolin, 1982). In our study, sleep disturbances were rarely reported and were ranked 9th (out of 15) on the list of reactions on the Impact of Event Scale.

Another difference worth noting between the results of our present study and those of the Baldwin Hills fire is that no significant differences in emotional distress and feelings of stress were found between those who had been exposed or were present for the fire and those who had not, nor for those who had suffered major loss or damage compared with those who had suffered only minor or no damage. The victims who had been present in the Baldwin Hills fire reported persistent, intrusive thoughts. In our Altadena sample, no significant differences between the two groups were found. The Baldwin Hills fire victims who had suffered complete or severe damage also reported many more depressive reactions and stress symptomatology than those who did not. Again, our study showed no significant differences between the two groups.

Reasons for the differences between the results of the two studies of victims of devastating fires, our current study of the Altadena fire and the Baldwin Hills fire, are difficult to find. One area examined was the sociodemographic characteristics of the two sample populations. However, differences between the two groups were minimal. For example, they were similar in mean age (57 in Baldwin Hills vs. 52 in Altadena); sex (14 women, 11 men vs. 15 women, 9 men); education (15.6 years vs. 15.2 years); household members (2.7 vs. 2.3); mean length of residence (15 years vs. 15.2 years); and employed full- and part-time (76% vs. 79%). The major difference was ethnicity, with all the respondents African-American homeowners in the Baldwin Hills sample, and 21 of the 24 respondents in the Altadena sample Caucasian, along with 2 Asian/Pacific Islander and only one

African-American. However, both populations were considered stable, long-time homeowners, and middle to upper middle-class.

One major difference does lie in the location of the fires. Baldwin Hills is located within the urban area, where streets and pavements have been long-established, street lamps lighted the area, and the typically suburban development was of rows of moderately expensive homes. Altadena is one of the border suburban areas of Los Angeles, with many of its homes built into the hills and canyons that encircle the city in the north. The surroundings are rugged and the terrain mountainous, filled with trees and brush.

Although the homes are separate and nestled into strategic spots in the hills, the sense of community is strong in the Altadena sample. The residents were longtime homeowners who, for the most part, loved their isolated locations in the rugged hills. If they had to leave they stated they would be unhappy and would miss their surroundings. Even after suffering such major losses, the number who said they might consider leaving the area increased by only one (from 7 to 8) among those who said they had at one time considered leaving. A sense of community was also evident from their responses that most (75%) had been friendly with their neighbors, that they had found their neighbors helpful (58%), both actually (29%), materially (42%) and emotionally (29%). Even though they felt somewhat critical of their neighbors' effort at preparedness for a possible fire, with only 25% estimating that their neighbors were well-prepared, while 76% were either only fairly (29%), or very (38%) unprepared, there were practically no expressions of anger or recriminations voiced against their neighbors. They also felt that the government and community officials had been well aware of their needs in the case of fire, with most (62%) respondents rating them either well (33%) or somewhat (29%) prepared, while the rest (38%) were rated fairly (25%) or very (13%) unprepared.

While the possibility of a connection between the degree of psychological distress and emotional problems and the level of community spirit seems rational and makes good clinical sense in terms of the feeling of concern and mutual sharing of a traumatic experience, the evidence for it is only suggested in our study. Obviously, there is need for further research with investigation data relevant to the question as an integral aspect of the data obtained.

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