

THE IMPACT OF DISASTER ON PRIMARY GROUP LINKAGES*

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American society, like other “post-industrial societies” (Bell, 1973), reflects a long-term trend of increased bureaucratization. Most of our day-to-day activities occur within social settings which reflect many of the principles Weber (1947) identified before the turn of the century. It matters not whether one is an Indian baby born in Oklahoma, a Black seventh grader in a Washington, D.C. public school, a middle-aged Chicano manufacturing shoes in Los Angeles, or an elderly Polish woman in Trenton mailing a letter while on the way to mass – the reality of bureaucracy is pervasive.

Not all of our time is spent in such settings, however. There are the quiet moments – times when the gods of technical expertise and of efficiency are put aside. Far less visible than the varied types of monuments built through bureaucracies, nearly all individuals participate daily in a wide variety of primary groups (Cooley, 1909; Litwak and Szelenyi, 1969),

wherein the rules of the game often contradict the guiding principles which make bureaucracies possible. Undoubtedly, the most significant type of primary group for most Americans is the nuclear family. In direct contrast to the long-term trend of bureaucratization – wherein skilled managers have increased the differentiation, size, and power of their organizational weapons – American living patterns have shifted over the last two hundred years with the nuclear family emerging as a predominant organizational pattern (e.g., Winch, 1963; 1970). When contrasted to many other societies, the differences in interaction patterns and expressions of reciprocity among kin are dramatic (Parsons, 1943; Gouldner, 1960), both on a daily basis (Stephens, 1963), and in times of crisis (Kates et al., 1973).

But this is not to say that nuclear families within America are isolated totally (Sussman, 1959; Mindel, 1970). Like any other social unit, nuclear families exist within a complex physical and social environment. The boundaries are not closed; rather, families are penetrated from every direction. However, paralleling analyses of complex organizations (Haas and Drabek, 1973) and other types of social units, much research on families has reflected

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a “closed system” imagery wherein environmental fluctuations and linkages have remained relatively ignored (Aldous, 1970; Ruano, et al., 1969; Leichter, 1967). Relationships with kin are perhaps the most obvious linkage between nuclear family members and units within their environment. While the sixties produced numerous investigations of kin interaction (we recently located over two dozen published studies which were conducted between 1960 and 1972; see Drabek et al., 1975); it was not until 1972 that the first empirical study was published wherein a national sample of Americans was used (Klatzky, 1972). This was a pioneering effort, but many questions remain unanswered, e.g., only married male respondents were used and data were limited to relationships with male relatives (Klatzky, 1972:5).

What are the theoretical implications of these observations? There are several. But most importantly, the need for more thorough and systematic analyses of nuclear family environments is underscored. Alternative linkages to environmental sectors and consequences of shifts and variations in these require empirical exploration. In short, the insights offered by such “open system” theorists as Buckley (1967) and Bertalanffy (1968) should serve as guides for a wide variety of empirical studies.

Let’s try an analogy to emphasize one of the many insights offered by this perspective. Picture an octopus. From the pulsating head extend eight tentacles. Each is reaching outward, seeking to establish a link to some aspect of its environment. Should another one be nearby, their tentacles might touch and form a bond. Knowledge about the environment and rapid adaptations to changes in it are facilitated through these tentacles.

We found that this imagery — the family as an open system, an octopus if you will — was exceedingly helpful in trying to understand the human side of a highly destructive tornado which ripped through Topeka, Kansas, June 8, 1966. Radiating out from each victim

family were a set of “tentacles” in a sense — links to other social units, be they kin, neighbors, or friends. Of course, unlike the octopus, families vary greatly, both from one another and over time, regarding the number and strength of such tentacles. While we do not want to minimize the violence or destruction of this tornado, or any other type of natural disaster, we do believe that our understanding of the human consequences of such events has been hindered in the past because we have focused excessively on the degree and extensiveness of physical losses. Thus, while many Topeka families did incur many types of losses because of this tornado, most of these same families almost simultaneously experienced a rapid influx of inquiries about their well being. Often these inquiries were coupled with offers of help and assistance. Indeed, for victim families these emergent sets of transactions were as much a part of the event as were the losses in property and physical injury (see Crowe, et al., 1973).

While the emergence of such “therapeutic communities,” as Fritz (1961; 1957) labeled this phenomenon, has been documented widely (e.g., Dynes, 1970; Fritz and Mathewson, 1957; Quarantelli, 1960), we still lack much understanding of the degree of variation among families regarding the intensity and consequences of their involvements. We do have an exceptional, albeit speculative model from Barton (1969: 216–279) comprised of numerous hypotheses which specify variations in the speed of emergence and extensiveness of these “altruistic communities”. But we have not located a single study wherein the *long-term* consequences of such involvements have been examined (Mileti et al., 1975).

Following the 1966 tornado, the Topeka community rapidly responded in accordance with the predictions that researchers like Fritz (1961), Barton (1969), or Quarantelli and Dynes (1972) might offer. Taylor, Zurcher and Key (1970) have prepared a detailed account of the rise and gradual demise of an

emergent “therapeutic community” as individuals within various types of primary groups and bureaucratic structures throughout Topeka and its environs sought to help the sixteen hundred who were left homeless and the thousands of others who incurred less severe losses. In turn, most of the 338 victims interviewed during the course of our study reported that they received aid from some source, e.g., 54 percent received assistance from relatives, 42 percent from friends. As might be anticipated, receipt of such assistance co-varied with several social characteristics of the families, as we have reported elsewhere (Erickson, et al., 1974). Nearly all of the aid received was offered to these families – rarely did they ask. When they did, their requests were directed toward bureaucratic structures, e.g., Red Cross, Salvation Army, rather than primary groups comprised of relatives or friends who were by far the more frequent sources of help.

But what of the *long-term* impact of such experiences? What consequences, if any, would we expect such events to have on linkages with primary groups several years later? Would neighbors become closer? Would friendship groups become more intense? Following a brief description of our methodological strategy, we will report findings related to these questions.

METHODOLOGY

Prior to the 1966 tornado, Key, Taylor and Zurcher had completed two interview surveys with over thirteen hundred lower income Topeka families (Key, 1967; Taylor, et al., 1966). Through newspaper accounts, Red Cross records, and information secured from other organizational officials, staff at the Menninger Foundation had identified several victim families among those who had been interviewed previously. We saw this data base as affording a unique opportunity to construct a quasi-experimental design (Campbell and Stanley, 1966: 47–50) wherein victim and

non-victim families might be compared both before and a few years after the tornado. However, upon initiating this “follow-up” project, we decided to expand the design by obtaining four additional samples for which only post-disaster data would be available but which would include victim and control families in both high income and low income sectors of the city. This provided a larger data base and increased variation in socioeconomic status which was desired since the initial surveys were conducted in areas destined for urban renewal and anti-poverty programs. Figure 1 depicts our final design through which victim and comparison families were selected for interviewing. These averaged about two hours and were conducted by many of the same interviewers who had participated in the earlier pre-tornado studies.

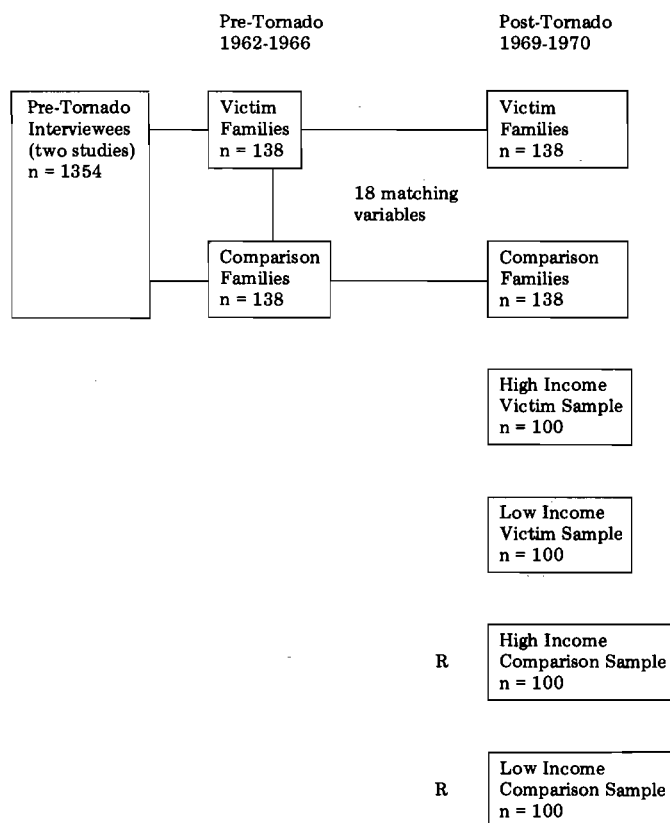


Fig. 1. The research design. (R designates random selection.)

A highly detailed account of the major problems we confronted and the procedures implemented is available elsewhere (Drabek et al., 1973). Here we will confine ourselves to two major points. First, a few comments regarding "internal validity," i.e., are there differences between the victim and comparison families other than the tornado experience which might account for any variations found regarding primary group linkages? In an effort to maximize equivalence among the victim and non-victim family samples we did two things. First, as victim families were identified, eighteen matching variables were used to select the "best fit" from among the pool of over a thousand families for whom comparable pre-data were available, e.g., ethnicity, age and sex of respondent, kin interaction, total family income, and the like.¹ This was true, of course, only for the 138 victim families for whom such data were available; the two hundred comparison families (high and low income) with only post-disaster data were selected randomly in accordance with the number of victim families located in each respective census tract.² The precision matching was accomplished using a procedure devised by Yinger, et al. (1967). Upon constructing an "index of congruence" whereby the degree of difference between each matched pair was obtained, we found that we had attained "closer" matches than they reported in their initial use of this procedure.

But what of other events which might have occurred in the three years following the tornado? Of course, no two families have identical social histories. However, in an effort to assess whether or not the samples might differ widely, we formulated fourteen questions concerning various types of family crises including the tornado, e.g., "In the past three years, has any family member had a serious injury or a major operation?" "Any who had passed away?" "Any serving in the Armed Forces?" Only two of the contrasts were significant statistically ($P < 0.05$). A slightly higher percentage of

comparison families had a member in the Armed Forces during the three-year period (11%-V; 18%-C) and also indicated the death of a close friend or relative during this time (56%-V; 67%-C). While far from assuring that the victim and comparison samples were equivalent, these data, like the analysis of the degree of fit obtained through the precision matching procedure, indicated that these families differed primarily in one way — for only some the Wednesday evening of June 8, 1966 had special significance. Within the limits of this design then, we have some basis for attributing differences found between victim and comparison families to the tornado experience. However, the possibility remains that any differences reported may reflect some other source of variation not yet identified.

In contrast to these types of issues concerning the degree of group equivalence is another set of questions pertaining to "external validity" (Campbell and Stanley, 1966), wherein we ask — "How far beyond the families studied can we generalize our findings?" There are two dimensions to this issue: (1) generalization to other families; (2) generalization to other events. In our judgment, these are the most serious design deficiencies in this study. While self-selection was not problematic, we had no way of knowing the total number of "victims" within the community or the degree to which our samples may have been representative of this universe. Actually, the determination of "who is" and "who is not" a victim within a community disaster of this type turns out to be rather complicated. In addition, analyses regarding the degree to which our matched samples corresponded to the "pool" of pre-tornado interviewees from which they were selected have indicated that the sample of families in our study differed on several variables (see Erickson et al., 1973, for detailed presentation).

A second type of generalization represents an equally important constraint. This study was based on a single case — the 1966 Topeka

tornado. Until research is completed on several other events with *comparable analytic criteria*, any generalization must be viewed as speculative (Drabek, 1970; 1969). For example, these Topeka families experienced what appeared to be a rather intense post-disaster “therapeutic community” following the destruction and injury of this tornado. How might the long-term consequences on primary group linkages differ if a similarly destructive event occurred which was not complemented by this community response? Similarly, tornadoes strike rather randomly and with minimal warning in contrast to most floods or hurricanes. Few pre-disaster adjustments are possible. Finally, while seventeen persons were killed, given the enormity of the property damage which was estimated at over one hundred million dollars (Taylor, Zurcher and Key, 1970: viii), few families lost members. To generalize any of our findings to events with *different analytic characteristics* would surely be in error.

In short, a recent survey of the published literature did not yield a single study focused on the long-range consequences of disaster on primary group relationships (Mileti et al., 1975). Given the design deficiencies in previously published disaster research, we concluded that our methodological rigor represented a major step forward. However, our study did have several limitations, most notably restrictions on the range of generalization. These should be kept in mind as we review the findings.

FINDINGS

What are the consequences on the linkages between nuclear family units and other primary groups three years after being victimized by a large scale natural disaster? This is one of several questions dealing with different aspects of family functioning that we have sought to penetrate through our analysis of the Topeka data. Linkages of four different types of

“quasi-primary” groups will be discussed: (1) relatives, (2) friends, (3) neighbors, and (4) voluntary associations of various types.³

Linkages with Relatives

As indicated above, many families (54%) received aid of various forms from relatives shortly after the tornado. But now, three years later, would victim and non-victim families reveal different patterns in their relationships with relatives? Data related to three aspects of kin relationships are summarized in Table I. While only one of the comparisons was significant statistically, there was a *slight* tendency for victim families to interact more frequently with their immediate kin, despite the fact that they appeared to be somewhat less involved in a kin network and reported less frequent exchange transactions with kin such as borrowing or lending. As we have reported elsewhere (Drabek et al., 1975), this same trend was found when only the matched samples were compared. Furthermore, the pre and post comparisons indicated that these differences were not due to matching inadequacies. That is, between the two time periods, victim families shifted in their responses to form this pattern, whereas non-victims were more stable.

Generally speaking, these same patterns were found when victim and comparison families were reviewed within both the high and low income samples (see Table II). In five out of the six comparisons, there was a slight tendency for victims to interact more frequently with their immediate kin than non-victims. Reflecting variations in life styles, families in the lower income sample reported far more frequent kin interaction than those in the upper income sample. Results related to participation in a kin network and exchange transactions were less consistent and there was one notable exception to the lower rates among victims — low income victim families reported a higher frequency of participation in activities with relatives than non-victims. Also, the dif-

TABLE I

Linkages with Relatives among Victim and Comparison Families*

| Criterion Group | Interaction Frequency with Immediate Kin | | | | | | | | |
|---------------------|--|------------|------------|------------------|------------|------------|-------------|------------|------------|
| | Parents | | | Married Children | | | Siblings | | |
| | Yearly | Monthly | Weekly | Yearly | Monthly | Weekly | Yearly | Monthly | Weekly |
| Victim Families | 30 (37) | 19 (23) | 50 (61) | 28 (36) | 9 (11) | 63 (80) | 52 (124) | 18 (43) | 30 (71) |
| Comparison Families | 38 (49) | 22 (29) | 40 (52) | 29 (39) | 11 (14) | 60 (80) | 56 (129) | 18 (40) | 26 (57) |
| V-C χ^2 | 2.76 | | | 0.34 | | | 1.43 | | |

| Criterion Group | Frequency of Participation in a Kin Network | | | | | |
|---------------------|---|------------------------|-----------------|--|-------------------|-----------------|
| | Frequency Relatives Get Together | | | Frequency of Activities with Relatives | | |
| | Once a year or less | Several times per year | Monthly or more | Never | Less than monthly | Monthly or more |
| Victim Families | 55 (145) | 33 (87) | 12 (33) | 18 (48) | 43 (116) | 39 (105) |
| Comparison Families | 51 (138) | 38 (102) | 11 (29) | 20 (55) | 40 (108) | 40 (108) |
| V-C χ^2 | 1.59 | | | 0.80 | | |

| Criterion Group | Frequency of Exchange Transactions with Kin | | | | | |
|------------------|---|------------|------------|-------------|------------|-------------|
| | Borrow or Lend | | | Do Favors | | |
| | Rarely | Yearly | Monthly | Rarely | Yearly | Monthly |
| Victim Families | 68 (183) | 16 (43) | 16 (43) | 41 (108) | 18 (47) | 42 (111) |
| Control Families | 61 (166) | 19 (52) | 20 (54) | 31 (82) | 22 (58) | 48 (129) |
| V-C χ^2 | 2.91 | | | 6.04** | | |

*Figures listed are percentages; corresponding N's are included in parentheses.

**P < 0.05.

ferences between the high and low income samples were rather inconsistent here as well, with more higher income families indicating frequent participation in activities with relatives generally.

Despite some inconsistencies and several instances where the groups being compared

were highly similar, four trends were clear. First, victims evidenced a slightly greater frequency of interaction with their immediate kin than did non-victims. Second, non-victim families reported more frequent rates of participation in a kin network and exchange transactions with unspecified groups of relatives.

TABLE II

Linkages with Relatives among Victim and Comparison Families: High Income and Low Income Samples*

| Criterion Group | Interaction Frequency with Immediate Kin | | | | | | | | |
|-----------------------------------|--|------------|------------|------------------|-----------|------------|------------|------------|------------|
| | Parents | | | Married Children | | | Siblings | | |
| | Yearly | Monthly | Weekly | Yearly | Monthly | Weekly | Yearly | Monthly | Weekly |
| <i>High Income Sample</i> | | | | | | | | | |
| Victim Families | 31 (15) | 31 (15) | 38 (18) | 49 (16) | 9 (3) | 42 (14) | 49 (40) | 26 (21) | 26 (21) |
| Comparison Families | 37 (23) | 27 (17) | 37 (23) | 33 (13) | 18 (7) | 49 (19) | 57 (49) | 17 (15) | 26 (22) |
| V-C X ² | | 0.40 | | | 2.18 | | | 1.84 | |
| <i>Low Income Sample</i> | | | | | | | | | |
| Victim Families | 28 (11) | 10 (4) | 63 (25) | 23 (13) | 5 (3) | 71 (40) | 54 (46) | 13 (11) | 33 (28) |
| Comparison Families | 32 (12) | 16 (6) | 53 (20) | 35 (18) | 4 (2) | 62 (32) | 63 (50) | 18 (14) | 20 (16) |
| V-C X ² | | 1.59 | | | 1.75 | | | 3.65 | |
| <i>High vs. Low X²</i> | | 9.94** | | | 9.40** | | | 2.23 | |

| Criterion Group | Participation in a Kin Network | | | | | | Exchange Transactions with Kin | | | | | |
|-----------------------------------|--------------------------------|------------|------------|---------------------------------|------------|------------|--------------------------------|------------|------------|------------|------------|------------|
| | F. Relatives Get Together | | | F. of Activities with Relatives | | | Borrow or Lend | | | Do Favors | | |
| | OY | STY | M | N | LTM | M | R | Y | M | R | Y | M |
| <i>High Income Sample</i> | | | | | | | | | | | | |
| Victim Families | 52 (50) | 37 (35) | 12 (11) | 16 (15) | 45 (44) | 39 (38) | 64 (62) | 21 (20) | 16 (15) | 34 (33) | 22 (21) | 44 (43) |
| Comparison Families | 47 (47) | 41 (41) | 12 (12) | 8 (8) | 49 (49) | 43 (43) | 54 (54) | 20 (20) | 26 (26) | 21 (20) | 25 (24) | 55 (53) |
| V-C X ² | | | 0.53 | | 2.66 | | | 3.46 | | | 4.43 | |
| <i>Low Income Sample</i> | | | | | | | | | | | | |
| Victim Families | 55 (54) | 36 (35) | 9 (9) | 13 (13) | 47 (46) | 40 (40) | 64 (63) | 16 (16) | 20 (20) | 41 (40) | 18 (18) | 41 (40) |
| Comparison Families | 56 (54) | 35 (34) | 9 (9) | 34 (34) | 33 (33) | 33 (33) | 64 (64) | 21 (21) | 15 (15) | 32 (32) | 24 (24) | 44 (44) |
| V-C X ² | | | 0.01 | | 12.19** | | | 1.39 | | | 1.92 | |
| <i>High vs. Low X²</i> | | | 1.54 | | 23.92** | | | 1.08 | | | 3.75 | |

*Figures listed are percentages; corresponding N's are included in parentheses. See Table I for code categories, e.g., OY = once a year or less.

**P < 0.01

Third, families in the high income sample interacted less frequently with immediate kin than did those in the low income sample, although they did report more frequent contacts and exchanges with relatives generally. Finally, aside from one instance, the pattern of victims reporting more frequent interaction with immediate kin, but less participation in activities and exchanges with relatives generally, held in both the high and low income samples as well as the matched samples.

Linkages with Friends

In contrast to relatives, 40 percent of the families interviewed indicated that they interacted regularly with a group of friends (see

Babchuck, 1965). As reflected in the data presented in Table III, the percentage of victim families reporting a linkage of this type was slightly higher than the non-victims. And the frequency with which such interaction took place was slightly higher for victims as well.

To try and ascertain the relative strength of these linkages to friends, all interviewees were asked who they visited with more – friends or relatives? Who they would turn to if confronted with a “money problem” or a “family problem”? A larger proportion of victim families chose relatives over friends in each instance. While victims only slightly more frequently reported linkages to groups of friends, a much larger number indicated stronger bonds to relatives. Also, lower percentages of victims designated

TABLE III

Linkages with Friends among Victim and Comparison Families*

| Criterion Group | Participation in Friendship Groups | | | | |
|---------------------|-------------------------------------|-------------|--|------------|------------|
| | Gets Together with Group of Friends | | Frequency Friendship Group Gets Together | | |
| | Yes | No | Yearly | Monthly | Weekly |
| Victim Families | 42 (141) | 58 (195) | 19 (27) | 41 (58) | 41 (58) |
| Comparison Families | 39 (133) | 61 (204) | 18 (24) | 49 (65) | 34 (45) |
| V-C X ² | 0.44 | | 1.93 | | |

| Criterion Group | Strength of Linkages – Relatives vs. Friends | | | | | | | |
|---------------------|--|-------------|--------------------------------|------------|-------------|--------------------------------|-----------|-------------|
| | Visit More Frequently | | Who to Contact with Future F P | | | Who to Contact with Future M P | | |
| | Relatives | Friends | Relatives | Friends | Institution | Relatives | Friends | Institution |
| Victim Families | 52 (134) | 48 (122) | 65 (149) | 31 (71) | 5 (11) | 50 (130) | 8 (20) | 42 (110) |
| Comparison Families | 39 (102) | 61 (161) | 56 (136) | 33 (79) | 11 (27) | 40 (104) | 7 (18) | 53 (139) |
| V-C X ² | 9.62*** | | 7.51** | | | 6.37** | | |

*Figures listed are percentages; corresponding N's are included in parentheses. "Institution" in lower portion of table refers to such responses as "bank," "minister," "doctor," i.e., where neither friend nor relative was viewed as most likely potential help source.

**P < 0.05.

***P < 0.01.

TABLE IV

Linkages with Friends among Victim and Comparison Families: High Income and Low Income Samples*

| Criterion Group | Participation in Friendship Groups | | | | |
|-----------------------------------|-------------------------------------|------------|--|------------|------------|
| | Gets Together with Group of Friends | | Frequency Friendship Group Gets Together | | |
| | Yes | No | Yearly | Monthly | Weekly |
| <i>High Income Sample</i> | | | | | |
| Victim Families | 62 (62) | 38 (38) | 21 (13) | 45 (28) | 34 (21) |
| Comparison Families | 52 (52) | 48 (48) | 10 (5) | 58 (30) | 33 (17) |
| V-C X ² | 2.04 | | 3.19 | | |
| <i>Low Income Sample</i> | | | | | |
| Victim Families | 34 (33) | 66 (65) | 17 (6) | 43 (15) | 40 (14) |
| Comparison Families | 25 (25) | 75 (74) | 39 (10) | 42 (11) | 19 (5) |
| V-C X ² | 1.68 | | 4.65** | | |
| <i>High vs. Low X²</i> | 30.70**** | | 2.85 | | |

| Criterion Group | Strength of Linkages – Relatives vs. Friends | | | | | | | |
|-----------------------------------|--|------------|-------------------------------|------------|-------------|--------------------------------|----------|-------------|
| | Visit More Frequently | | Who to Contact with Future FP | | | Who to Contact with Future M P | | |
| | Relatives | Friends | Relatives | Friends | Institution | Relatives | Friends | Institution |
| <i>High Income Sample</i> | | | | | | | | |
| Victim Families | 33 (30) | 67 (61) | 55 (49) | 37 (33) | 8 (7) | 48 (46) | 5 (5) | 47 (45) |
| Comparison Families | 25 (24) | 75 (73) | 52 (49) | 31 (29) | 17 (16) | 38 (37) | 3 (3) | 59 (57) |
| V-C X ² | 1.77 | | 3.65 | | | 1.56 | | |
| <i>Low Income Sample</i> | | | | | | | | |
| Victim Families | 68 (64) | 32 (30) | 63 (56) | 21 (19) | 16 (14) | 47 (46) | 5 (5) | 47 (46) |
| Comparison Families | 43 (42) | 57 (56) | 55 (47) | 35 (30) | 9 (8) | 39 (37) | 6 (6) | 55 (33) |
| V-C X ² | 12.35**** | | 4.80** | | | 2.88 | | |
| <i>High vs. Low X²</i> | 27.33**** | | 2.87 | | | 0.52 | | |

*Figures listed are percentages; corresponding N's are included in parentheses. "Institution" in lower portion of table refers to such responses as "bank," "minister," "doctor," i.e., where neither friend nor relative was viewed as most likely potential help source.

**P < 0.10.

***P < 0.05.

****P < 0.01.

some type of institution, such as a bank or minister, as a future help source. In short, while the trend was not always dramatic, more victim families appeared to have stronger linkages to friends, but their linkages to relatives were even tighter.

An identical pattern appeared within both the high income and low income samples (see Table IV), aside from a slightly lower frequency of interaction with friends among the victim families in the high income sample. But within these samples, the victim to non-victim contrast was much more pronounced. Fewer families in the low income sample reported linkages to friendship groups, in contrast to the high income, and their bonds to relatives were more intense. We were somewhat surprised, however, to find that both samples were nearly identical regarding the sources they would turn to if they had a money problem.

Regardless of their socioeconomic status then, a slightly larger proportion of families victimized by this tornado appeared to have tighter linkages to groups of friends. But their bonds to relatives were even stronger, especially as perceived as sources to whom they could turn in the event of some future emergency. Perhaps this pattern reflects a residual effect of their participation in the "therapeutic community" which emerged immediately after the tornado.

Linkages with Neighbors

A much clearer pattern was present in data related to linkages with neighbors (additional empirical studies of neighboring include Key, 1965; Litwak, 1961; Fellin and Litwak, 1963; Nohara, 1968). Consistently, fewer victim families reported bonds with neighbors than did those in the comparison sample. Among those who did visit with neighbors, victims did so somewhat less frequently. Over one-third (35%) of the victim families indicated that they had no neighbors with whom they interacted regularly, in contrast to 27 percent

of the non-victims. Similarly, across five separate items specifying different types of help that they might have given to or received from neighbors, larger proportions of victims indicated non-involvement. Finally, fewer victim families evidenced positive feeling towards their neighbors and fewer indicated that there were neighbors with whom they would try to maintain contact if they moved. In accordance with Homans' (1958) hypothesis, lower interaction rates between victim families and their neighbors, co-varied with less positive sentiments toward them as well.

In a remarkably consistent manner, these same trends appeared within the high income sample (see Table VI). Across the three general indicators and each of the ten items of which they were comprised, victim families within the high income sample evidenced less intense bonds with their neighbors. The picture within the low income sample was mixed, however. While substantially fewer victim families reported that they visited with their two nearest neighbors, those that did indicated slightly more frequent visiting. Low income victims indicated about the same number of neighbors with whom they spent time regularly as their non-victim counterparts. Similarly, the victim-non-victim differences regarding participation in the neighbor help pattern were very slight and inconsistent in direction. However, in accordance with the general trend found in the combined samples, low income victim families did express slightly less positive sentiments towards their neighbors.

Neighbors, as a type of external linkage, clearly were more important in the lives of families in the high income sample than those in the low income. A much larger proportion of the high income families reported that they visited with neighbors regularly. Similarly, they visited with a larger number of neighbors, although the frequency of such visits was slightly less. Aside from helping with housework, larger proportions of high income families indicated that they had shared such tasks

TABLE V

Linkages with Neighbors among Victim and Comparison Families*

| Criterion Group | <i>Visitation Pattern with Neighbors</i> | | | | | | | |
|---------------------|--|-------------|---------------------|------------|--------------|--|-------------|------------|
| | Visits with Two Nearest Neighbors | | Frequency of Visits | | | Number of Neighbors with whom Some Time is Spent Regularly | | |
| | Yes | No | Monthly | Weekly | Twice Weekly | None | Very Few | Many |
| Victim Families | 60 (199) | 40 (133) | 28 (58) | 24 (49) | 48 (98) | 35 (94) | 47 (126) | 19 (51) |
| Comparison Families | 78 (260) | 22 (75) | 25 (64) | 29 (76) | 46 (121) | 27 (74) | 49 (133) | 24 (65) |
| V-C X ² | 24.27**** | | 1.84 | | | 4.26 | | |

| Criterion Group | <i>Neighbor Help Pattern – Number of Families Indicating they Participated in these Activities</i> | | | | |
|---------------------|--|------------------|-------------------------|---------------------|--------------------------------|
| | Housework | Pick up at Store | Borrow & Lend Groceries | Caring for Children | Helping when N. F. has illness |
| Victim Families | 15 (38) | 34 (85) | 34 (83) | 29 (66) | 48 (120) |
| Comparison Families | 18 (44) | 40 (99) | 44 (108) | 38 (90) | 58 (142) |
| V-C X ² | 0.65 | 2.08 | 6.03*** | 3.98** | 4.54*** |

| Criterion Group | <i>Sentiments Toward Neighbors</i> | | | | | |
|---------------------|------------------------------------|------------|------------|---|------------|-------------|
| | Feelings Toward Neighbors | | | Neighbors would Maintain with, if Respondent Family Moved | | |
| | Positive | Neutral | Negative | None | One | Several |
| Victim Families | 66 (179) | 23 (63) | 10 (28) | 32 (86) | 23 (62) | 45 (123) |
| Comparison Families | 74 (201) | 20 (55) | 6 (16) | 22 (61) | 26 (72) | 51 (140) |
| V-C X ² | 5.08** | | 6.09*** | | | |

*Figures listed are percentages; corresponding N's are included in parentheses.

**P < 0.10.

***P < 0.05.

****P < 0.01.

with neighbors as picking up groceries at the store or caring for children. And given this pattern of interaction and exchange, the more positive sentiments expressed towards neighbors by families in the high income sample followed consistently.

But while linkages to neighbors were more intense for families in the high income sample, victims within this sample consistently reported less interaction, fewer exchanges and less positive sentiments when compared to non-victims. While the low income sample evidenced less

TABLE VI

Linkages with Neighbors among Victim and Comparison Families: High Income and Low Income Samples*

| Criterion Group | Visitation Pattern with Neighbors | | | | | | | |
|-----------------------------|-----------------------------------|------------|---------------------|------------|--------------|--|------------|------------|
| | Visits with Two Nearest Neighbors | | Frequency of Visits | | | Number of Neighbors with whom Some Time is Spent Regularly | | |
| High Income Sample | Yes | No | Monthly | Weekly | Twice Weekly | None | Very Few | Many |
| Victim Families | 72 (70) | 28 (27) | 33 (24) | 29 (21) | 38 (28) | 30 (30) | 48 (47) | 22 (22) |
| Comparison Families | 90 (89) | 10 (10) | 23 (20) | 24 (21) | 53 (47) | 14 (14) | 51 (51) | 35 (35) |
| V-C X ² | 10.06*** | | 3.81 | | | 8.94** | | |
| <i>Low Income Sample</i> | | | | | | | | |
| Victim Families | 49 (48) | 52 (51) | 18 (9) | 22 (11) | 59 (29) | 38 (38) | 43 (43) | 18 (18) |
| Comparison Families | 71 (71) | 29 (29) | 21 (15) | 35 (25) | 44 (32) | 39 (39) | 46 (46) | 15 (15) |
| V-C X ² | 10.49*** | | 2.82 | | | 0.38 | | |
| High vs. Low X ² | 21.54*** | | 2.16 | | | 15.83*** | | |

| Criterion Group | Neighbor Help Pattern – Number Assisting in these Activities | | | | | Sentiments Toward Neighbors | | | | | |
|-----------------------------|--|------------|------------|------------|------------|-----------------------------|------------|------------|---------------------------|------------|------------|
| | Housework | Store | Gro. | Child. | Illness | Feelings Toward N. | | | N. would Maintain Contact | | |
| High Income Sample | | | | | | Pos. | Neu. | Neg. | None | One | Several |
| Victim Families | 11 (10) | 37 (33) | 43 (39) | 34 (26) | 49 (44) | 80 (80) | 16 (16) | 4 (4) | 25 (24) | 22 (22) | 53 (52) |
| Comparison Families | 23 (21) | 48 (44) | 65 (59) | 53 (48) | 71 (65) | 85 (85) | 11 (11) | 4 (4) | 17 (17) | 24 (24) | 59 (59) |
| V-C X ² | 4.57** | 2.53 | 8.43*** | 6.10** | 9.60*** | 1.08 | | | 1.70 | | |
| <i>Low Income Sample</i> | | | | | | | | | | | |
| Victim Families | 21 (19) | 33 (30) | 31 (28) | 28 (24) | 50 (45) | 58 (57) | 29 (28) | 13 (13) | 32 (32) | 28 (28) | 40 (40) |
| Comparison Families | 18 (15) | 38 (32) | 38 (32) | 29 (24) | 48 (40) | 66 (66) | 29 (29) | 5 (5) | 26 (26) | 29 (29) | 45 (45) |
| V-C X ² | 0.30 | 0.43 | 0.94 | 0.08 | 0.10 | 4.21 | | | 0.93 | | |
| High vs. Low X ² | 0.29 | 1.78 | 13.89*** | 10.09*** | 4.63** | 20.68*** | | | 7.53*** | | |

*Figures listed are percentages; corresponding N's are included in parentheses. See previous table for more complete listing of stub labels.

**P < 0.05.

***P < 0.01.

consistent results, the total data set clearly indicated that victims evidenced less intense linkages to neighbors than did non-victims.

Linkages with Voluntary Associations

Beyond the neighborhood, about one-third of the Topeka families interviewed indicated that they participated in a wide variety of voluntary associations (for comparison see Dotson, 1951; Booth, 1972; Williams, et al., 1973). While not a primary group in the strict sense of the term, these associations, political and special interest groups did represent important linkages which were often highly personalized. Victims were slightly less likely to belong to such groups, but in general, both in membership proportions and type of group, they did not differ much from the comparison

families. However, a larger percentage of victims did indicate affiliation with a religious organization (74% vs. 67%), and among the affiliates, victims reported a higher frequency of attendance.

Generally, these same trends appeared within both the high and low income samples. However, church affiliation was no more characteristic of high income victim families than their non-victim counterpart. There was a dramatic difference in church attendance among victims (82%) and non-victims (50%) within the low income sample, however. Perhaps this reflected a greater therapeutic quality of the church for low income families. Pre- and post-tornado data on the matched samples supported this interpretation in that over time victim families increased their frequency of church attendance while comparison families attended less regularly.

TABLE VII

Linkages with Voluntary Associations among Victim and Comparison Families*

| Criterion Group | Belong to Social or Civic Groups | | Type of Social or Civic Groups | | | | |
|---------------------|----------------------------------|-------------|--------------------------------|------------------------|------------------------------------|---------------------|------------|
| | Yes | No | Lodges-Frat. e.g., Moose | Veterans- Political | Hobby-Interest e.g., Sport. Cl. | Inst. e.g., YMCA | Other |
| Victim Families | 32 (108) | 68 (230) | 38 (41) | 13 (14) | 23 (25) | 14 (16) | 10 (11) |
| Comparison Families | 37 (125) | 63 (212) | 31 (39) | 13 (17) | 36 (45) | 16 (20) | 3 (4) |
| V-C χ^2 | 1.97 | | 4.85 | | | | |

| Criterion Group | Participation in a Religious Organization | | | | |
|---------------------|---|------------|--------------------------------|------------|-------------|
| | Church Affiliation | | Frequency of Church Attendance | | |
| | Yes | No | Yearly | Monthly | Weekly |
| Victim Families | 74 (176) | 26 (61) | 18 (50) | 18 (49) | 64 (177) |
| Comparison Families | 67 (155) | 33 (77) | 28 (72) | 19 (49) | 53 (137) |
| V-C χ^2 | 3.13** | | 8.47*** | | |

*Figures listed are percentages; corresponding N's are included in parentheses.

**P < 0.10.

***P < 0.05.

TABLE VIII

Linkages with Voluntary Associations Among Victim and Comparison Families: High and Low Income Samples*

| <i>Criterion Group</i> | <i>Belong to Social or Civic Group</i> | | <i>Type of Social or Civic Groups</i> | | | | |
|-----------------------------------|--|--------|---------------------------------------|------------------------|------------------------------------|---------------------|-------|
| | Yes | No | Lodges-Frat. e.g., Moose | Veterans- Political | Hobby-Interest e.g., Sport. Cl. | Inst. e.g., YMCA | Other |
| <i>High Income Sample</i> | | | | | | | |
| Victim Families | 54(54) | 46(46) | 37(20) | 7(4) | 32(17) | 11(6) | 11(6) |
| Comparison Families | 55(55) | 45(45) | 34(19) | 7(4) | 40(22) | 16(9) | 1(1) |
| V-C X ² | 0.02 | | 4.80 | | | | |
| <i>Low Income Sample</i> | | | | | | | |
| Victim Families | 30(30) | 70(70) | 40(12) | 16(5) | 16(5) | 23(7) | 3(1) |
| Comparison Families | 38(38) | 62(62) | 26(10) | 23(9) | 31(12) | 18(7) | 0(0) |
| V-C X ² | 1.43 | | 4.33 | | | | |
| <i>High vs. Low X²</i> | 17.04*** | | 11.03** | | | | |

| <i>Criterion Group</i> | <i>Participation in a Religious Organization</i> | | | | |
|-----------------------------------|--|--------|---------------------------------------|---------|--------|
| | <i>Church Affiliation</i> | | <i>Frequency of Church Attendance</i> | | |
| | Yes | No | Yearly | Monthly | Weekly |
| <i>High Income Sample</i> | | | | | |
| Victim Families | 78(50) | 22(14) | 21(18) | 17(15) | 62(53) |
| Control Families | 78(50) | 22(14) | 31(27) | 19(17) | 50(44) |
| V-C X ² | 0.00 | | 2.74 | | |
| <i>Low Income Sample</i> | | | | | |
| Victim Families | 82(56) | 18(12) | 15(13) | 24(21) | 61(52) |
| Control Families | 50(32) | 50(32) | 22(14) | 16(10) | 62(39) |
| V-C X ² | 15.53*** | | 2.30 | | |
| <i>High vs. Low X²</i> | 4.26** | | 2.79 | | |

*Figures listed are percentages; corresponding N's are included in parentheses.

**P < 0.05.

***P < 0.01.

As would be anticipated, linkages to voluntary associations were more prominent among those in the high income sample (55% high; 34% low). And there were marked differences in the type of associations in which families in these differing socioeconomic levels participated. Higher income families more frequently participated in hobby or special interest groups, while larger proportions of the low income families indicated involvement in veteran or political groups and various institutional groups like the "Y" or scouting.

Given this array of data and the limitations of our research procedures, what conclusions can we draw? Did the experience of being victimized by this tornado appear to have any type of lasting consequence on the types of primary group linkages that these families had?

CONCLUSIONS

Did the 1966 Topeka tornado affect the linkages of these nuclear families with other primary groups? Recall our analogy of the

octopus — one wherein we proposed that most family units could be conceptualized as having a series of “tentacles” radiating outward to link the family system to a wide variety of other social units. What consequences would being a disaster victim have on these external linking mechanisms?

Before pursuing this question, however, two cautionary remarks are in order. First, our data concern a single event; any who generalize our findings beyond, especially to events with markedly different analytic characteristics, should recognize that they may be led astray. Second, despite the quality of our design — which was more rigorous than any we have encountered in the published literature to date on human responses to natural disasters — there were other limitations regarding both internal and external validity. We really don’t know if any of the group differences observed actually were by-products of the tornado experience or simply reflections of pre-existing differences between the samples of which we remained unaware. Similarly, the degree to which our results might correspond to those found in another American community remains problematic. Thus, while this investigation was a significant step forward, results that might be applicable in a variety of other settings await further research.

We identified four types of external groups with whom nuclear families might be linked. In each instance *trends* were identified in our data which indicated differences between victim and non-victim families. Linkages with relatives and friends appeared to have been strengthened *slightly*, in contrast to a rather sharp and more consistent weakening of bonds with neighbors. Victims were slightly less attracted to voluntary associations now, with one notable exception — religious institutions. The difference here among families within the low income sample was most dramatic. Certainly these data would justify speculation that for low income families the salience of the church was increased for those who suffered

losses through this event. In general, however, while there were some inconsistencies, these differences between victims and non-victims held regardless of socioeconomic status and have been further substantiated through the pre- and post-tornado comparisons which have been made thus far.

Returning to our analogy of the octopus, each family had a set of tentacles which linked them to other social units. These linkages were the social routes through which much economic and psychological support were channeled during the hours and days of putting things back together (Gouldner, 1960). Those which reached out to kin and friends — the very tentacles which were strongest prior to the tornado — now appeared to be even more extensive, three years later. In contrast, those extending to neighbors and various types of voluntary associations were less intense. These appeared to have been weakened — except for one particular type of link — those joining families to some type of religious organization. Perhaps these patterns are residual consequences of feelings of reciprocity generated through participation in the post-disaster therapeutic community (Gouldner, 1960).

For the most part then, families who were victimized by this disaster generally resembled those with similar social characteristics, but who did not have the misfortune of residing within the path of this destructive funnel cloud. Three years afterwards only memories remained. The city was rebuilt and life continues as before. Yet, while not dramatic and at times somewhat inconsistent, several trends appeared in our data which suggested that certain residual effects had remained. Social bonds through which recovery was facilitated now appeared to have been strengthened at the expense of other linkages which had become somewhat less central in the everyday lives of these Topeka families. Tentacles which were strong initially were now even stronger; weaker ones were weakened even further.

NOTES

- 1 The eighteen variables used for matching were as follows (the first five listed were designated as "top priority": ethnicity, age and sex of respondent; family type (a ten category typology which specified household composition, e.g., children, and woman alone or man alone; children and man, wife, relative living together; no children and man and woman living together, unmarried or married; and so on); kin interaction (an 8 interval Guttman scale designed to measure the degree of participation with kin through such items as: "How often do you see your parents?"); welfare support; religious affiliation and frequency of church attendance; total family income, occupation and formal education of household head; neighborhood interaction (a 7 interval Guttman scale based on such items as: "Do you and any of the other women help one another? For instance, helping with meals or housework, picking up things at the store, caring for children, and so on); total number of persons in household; whether family owned or rented their home; length of time the family had lived in their present home; age of oldest child; help source available in Topeka that had been used in the past for financial or personal problems; intra-family strain (based on degree of marital conflict and rating of marital happiness); and participation in voluntary organizations."
- 2 The eight census tracts within the tornado path that had the lowest and highest ratings on median family income and property values were selected. This process must be used with caution since not all who reside in a so-called low income census tract would have low incomes, as Robinson (1950) and Barton (1969: 214–216) have stressed in their critiques, i.e., "the ecological fallacy". Based on data collected from respondents in each type of census tract, however, income and educational differences were substantial. For example, 60 percent of the low income sample had completed eleven years of schooling or less, whereas this was true of only 15 percent of the high income group. Similarly, 53 percent of the high income sample, as opposed to 10 percent of the low income, had attended college.
- 3 In general we will ignore pre- and post-tornado contrasts except where it appeared that these findings would alter our interpretations of the victim–non-victim contrasts. A thorough presentation of these data and those pertaining to a large number of related research questions will be available in a monograph currently in preparation.

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