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POST-DISASTER ADAPTIVE RESPONSES:
PARENT-CHILD REACTIONS TO THE
LOS ANGELES AREA/WHITTIER NARROWS EARTHQUAKE

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LOS ANGELES AREA/WHITTIER NARROWS EARTHQUAKE**

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THE EVENT

A major earthquake measuring 6.1 on the Richter Scale occurred in the Los Angeles Metropolitan Area at 7:42 a.m. on October 1, 1987. The earthquake was centered in the Whittier Narrows area about seven miles south of Pasadena. The initial tremor was followed by more than 15 aftershocks in excess of 3 on the Richter Scale. It caused \$65 million in estimated damage and killed at least 3 people. The American Red Cross set up 8 emergency centers in 5 cities to provide food and shelter for people left homeless by the earthquake. At least 400 people sought refuge at the shelters after their homes were damaged or destroyed. A state of emergency was declared by the President for the cities of Whittier and Monterey Park. In Whittier, a city of 70,000 residents, at least 800 homes and 30 businesses were damaged and 200 deemed unsafe, with damage exceeding \$12 million.

METHODOLOGY

Instrument

The instrument used in this study was a modification of the questionnaire used to study the reactions of children and families to the 1971 Sylmar Earthquake (Howard and Gordon, 1972). This instrument includes sections on the socioeconomic status of the family, including income, occupation, education of parents, ethnic background, and religious preference. The questionnaire also records the type of dwelling, the physical damage to the home and whether the residence was owned or rented, injuries sustained and time off from work. Detailed information was obtained regarding recall of the reaction to the event, including post-earthquake behavior and emotional reactions, parent-child communication patterns, and leadership patterns within the family with a view towards identifying to whom one can address oneself in a family constellation in times of disaster.

Child respondents were asked about their initial reactions when the earthquake occurred, their level of fear, instructions communicated to them by family or other caretakers. They were asked to compare their reactions to their perceptions about how other children were experiencing the event. They were also asked to describe how they currently felt, and whether their thoughts, feelings and anxieties about the earthquake persisted. They were also asked about the support systems available to help them cope with their feelings after the event.

Parents were asked to report their child's reactions in the period immediately following the earthquake (t-1) and their child's status at the time of the interview, which was conducted between three and five months after the event occurred (t-2). A behavior checklist was used asking parents if their child had any of the behavioral difficulties. Behaviors listed included learning problems (e.g., short attention span, underachieving), behavior problems (e.g. demanding behavior, hyperactivity), moods, habit disorders and problems such as sleep disturbances (e.g. bedwetting, nightmares), and specific fears.

The modified instrument included items from a questionnaire designed by James Goltz of the Southern California Earthquake Preparedness Project regarding beliefs about earthquake preparedness activities and knowledge of community resources. The questions asked were related to the steps that are recommended by emergency preparedness organizations. These include the storage of food, water and emergency supplies including flashlights, first aid kits, and so forth, compliance with advice regarding household safety, family preparedness planning and involvement in earthquake preparedness activities in the neighborhood.

Families who sought counseling for their children were queried about their reasons for seeking professional help, how helpful they regarded these services to be, and the effectiveness of the intervention.

Interviewers and Interviewer Training

Two experienced interviewers who had been trained by the Survey Research Center, Institute for Social Science Research at the University of California, Los Angeles, conducted all field interviews. Specific training was provided in administering the research instrument.

Recruitment of Subjects

The sample was developed in collaboration with the Emergency Services Coordinator, City of Whittier, and the San Fernando Valley Child Guidance Clinic, Northridge. The names of families with children ages 7-13 were obtained from the city officials and from the clinic's deputy director. Telephone contacts were made with these families to explain the purpose of the study, seek their cooperation, and to arrange a home interview. Prior to each interview, the informed consent form was discussed, and consent was secured. All interviews were conducted between three and five months after the earthquake.

RESULTS

Sociodemographic Characteristics

The study population of 60 respondents, was comprised of 30 parents and 30 children. Two-thirds of the sample resided in Whittier in close proximity of the epicenter of the earthquake; one-third of the sample resided at a greater distance from the epicenter in the San Fernando Valley. We interviewed 22 girls and 8 boys. The Whittier subsample consisted of 13 girls and 7 boys; the San Fernando Valley subsample consisted of 9 girls and 1 boy. The mean age of the total sample was 9 years; that of the Whittier subsample was 9.5 years, and that of the San Fernando Valley subsample was 8.5 years. Of the 30 adult respondents, 27 were mothers of the children interviewed, 2 were fathers, and 1 was the child's grandmother.

The income level of the respondents ranged from under \$10,000 (13.3%), \$10,000-\$20,000 (43.3%), \$20,000-\$30,000 (23.3%) to \$30,000-\$40,000 (20%).

The employment status of the sample consisted of full-time employed persons (37%), part-time employed persons (20%), homemakers (33%) and unemployed persons (10%). Forty-four percent of the respondents owned their homes and 56% were renters. Sixty-seven percent lived in single family residences, 23% lived in apartments, and 10% lived in a duplex or other type of housing.

Adult respondents self-reported their ethnicity as Anglo (33%), Black (20%), Hispanic (40%), and American Indian (7%). Fifty percent of the sample were Catholic, 40% were Protestant, and 10% were Jewish. Forty percent of the adults reported that religion was very important, 40% claimed that it was somewhat important, and 20% attributed little importance to it.

Parental Response

In reporting contextual information regarding the effect of the event on their households and families, 57% reported damage to their homes, a family member was injured in 17% of the families, and 47% of the adults took time off from work. Changes in their sleeping arrangements, involving change of bed or room were made in 90% of the households at the time of the interview and 17% still had these changed sleeping arrangements. In response to the question regarding their perception of the event, 63% knew it was an earthquake, 10% thought it was bomb or explosion, and the remainder thought it was either a thunderstorm, sonic boom or a plane crash.

Parents reported the following immediate reactions to the earthquake: 37% reported "going to their children", 33% went under a door during the quake, and another 17% went to a "safe place", 13% sat or stood still and 7% left the house.

In reporting their next actions after the quake, 20% said they went out of doors, 17% remained in a doorway, 13% inspected residential damage, 10% reported being in a state of panic; 10% comforted their children, 10% turned on the television and 7% resumed activities.

When asked to report specific actions taken in the two-hour period immediately following the earthquake, 60% of the adults reported checking and adjusting utilities, such as gas, 33% left the neighborhood and 30% evacuated their homes. During this same period, all of the respondents listened to television and the radio, 90% tried to contact others outside the home, and 47% helped someone else in the neighborhood to recover from the disaster.

In reporting their own emotional reactions at the time of the earthquake, 77% said they cried or screamed, 20% remained silent, and 3% began to question what had occurred.

In self-reporting their own level of fear during the event: 63% were very frightened, 24% were somewhat frightened, 7% were not very

frightened, 3% were not frightened at all, and 3% could not say. When asked how they reacted to the aftershock that occurred four days later, 37% reported that they reacted the same and 63% reported acting differently. Of this group who reacted differently, an equal number were more frightened or less frightened than during the initial earthquake.

Parents were asked whether they verbally expressed their feelings about the earthquake to their children. Seventy-seven percent said they did and 23% said that they did not. All of the adults interviewed reported talking about the event. They talked with family members (93%), with friends (73%), with neighbors (43%), and with a variety of others, including co-workers, counselors, teachers, church members, physicians and in a support group. They all reported that everyone they talked to felt as they did and 83% indicated that talking about their feelings was helpful to them.

When asked "How often do you discuss your own personal feelings with your family?", 40% said very often, 23% fairly often, 23% occasionally, 7% seldom and 7% never. The earthquake was an event that all of those interviewed discussed except for the 7% who never talked to their families about feelings.

Parents reported their child's initial reactions immediately following the earthquake as follows: 43% cried or screamed, 37% wanted to be comforted, 10% began to question what had occurred, 3% remained silent or withdrew, and 7% of the sample responded in a variety of ways.

The following table compares the parent-reported post-earthquake behaviors of children in the total sample of the t-1 (immediately following the earthquake) and t-2 (3-5 months later) periods:

BEHAVIOR CHECKLIST* (N=30)

	t-1	t-2
<u>Learning Problems</u>		
Short Attention Span	43%	30%
Inattentative	23%	13%
Underachieving	20%	17%
Truancy	7%	3%
<u>Moods</u>		
Withdrawn	23%	17%
Depressed	37%	20%
<u>Habit Disorders</u>		
Nail Biting	37%	37%
Lying	13%	13%
Eating Problems	27%	10%

Behavior Problems

Hyperactive	20%	13%
Demanding	23%	20%
Bossy	17%	13%
Fighting	20%	23%
Argumentative	33%	30%
Does Not Obey	30%	26%
Accident Prone	14%	10%

Sleep Problems

Nightmares	47%	13%
Sleep Disturbances	63%	43%

<u>Specific Fears</u>	53%	50%
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* Results do not total 100%

When asked how they would handle their children's fears in a future disaster, 23% said that they would tell them it was okay to be afraid, 23% would attempt to calm their children, 20% would express their true feelings, 17% would try to minimize the problem, 17% would encourage talking, 17% would seek counseling, and 13% would offer religious comfort (responses total more than 100%, since the respondents were able to report more than one coping style).

When asked their opinion regarding the likelihood of another major earthquake striking Los Angeles in the next 12 months, 53% felt it was very likely, 33% somewhat likely, 0% somewhat unlikely, 10% very unlikely, and 3% did not know. When asked about the likelihood of other types of disasters occurring, 7% said very likely, 7% somewhat likely, 33% somewhat unlikely, 47% very unlikely, and 7% did not know. The majority of respondents in the sample viewed another major earthquake as a possibility, the prospect of another type of major disaster was held as minimal.

When asked their opinion of whether this earthquake had been predicted, 10% said definitely, 20% were not sure, 57% said definitely it was not, and 10% said they did not know. When asked whether they had discussed the possibility of leaving Los Angeles with their families and friends, 57% of those interviewed said that they had.

Preparedness

Adult respondents were questioned about their earthquake preparedness activities. The following table shows the results of the survey of earthquake preparedness activities:

<u>Activities (N=30)</u>	<u>Done for Earthquake</u>	<u>Other Reason</u>
Stored Water	30%	7%
Stored Food	20%	0%
Battery-Operated Radio	30%	30%
First Aid Kit	23%	23%
Working Flashlight	37%	37%
Other Supplies	7%	3%
Reinforced House	3%	0%
Rearranged Cupboards	0%	0%
Cupboard Latches	0%	0%
Inquired Re: Quake Insurance	7%	0%
Bought Earthquake Insurance	7%	0%
Instructed Children	27%	3%
Family Plans for Post-Earthquake Reunion	27%	3%
Family Plans for an Emergency Procedures Plan at Home	27%	3%
Contacted Neighbors and Friends for Info./Ideas	10%	7%
Set-up Neighborhood Responsibility Plan for the Elderly and Children	3%	0%
Attended Block Meeting Re: Earthquake Preparedness	0%	0%

Respondents were also asked to report on how well-prepared they regarded themselves, the community-at-large and public officials to be. The following table indicates their perceptions of preparedness:

PERCEIVED PREPAREDNESS (N=30)

<u>Perceptions</u>	<u>Self</u>	<u>General Public</u>	<u>Public Officials</u>
Very Well Prepared	10%	3%	30%
Somewhat Prepared	33%	17%	40%
Fairly Unprepared	23%	54%	17%
Totally Unprepared	33%	27%	3%

Respondents were also asked to report their knowledge of community agencies currently offering information and assistance in earthquake preparedness. Sixty-three percent of the adult sample were unaware of groups that prepared the community's residents for a disaster. A list of twenty-four agencies and organizations was provided to those indicating awareness of community preparedness activities. The following were the only ones of which they had knowledge: The Red Cross (27%), school systems (17%), city government agencies (10%), churches (7%), fire department (3%), television (3%) and radio (3%).

The respondents in this study were asked to identify their sources of public information about the earthquake and about disaster assistance services. The following table indicates these sources of information regarding earthquake preparedness and earthquake predictions:

SOURCES OF INFORMATION (N=30)

Television News Programs	87%
Discussion with Family, Friends and Others	87%
Newspapers	77%
Radio	73%
Television Special	73%
Pamphlets in the Mail	47%
Magazine Articles	37%
Movies	30%
Television Commercials	27%
Books	13%

Child Responses

The children in the sample were asked about their reactions to the earthquake. Four of the children in the study reported that they knew it was an earthquake that was occurring, six of them had no idea what was taking place. Six of them thought it was a truck, plane, train or bulldozer, six children thought it was various household noises, two recognized the sound as ground-shaking noises, but not as an earthquake. Two children thought that an intruder was breaking into the house, one child thought that it was a gunshot. One of the children thought that his mother was angry and shaking the house, one said that it was "me moving my feet", another said that it was her father bumping his head against a lamp, and still another child thought that "God was ready to come".

The majority of the children (80%) reported being "very frightened" during the earthquake and when the shaking stopped children reported taking the following actions:

Post-Earthquake Actions (N=30)

Went outdoors	33%
Remained in the doorway	30%
Sought comfort from parents	14%
Stayed where they were	10%
Watched T.V./listened to the radio	7%
Contacted others	3%
Inspected damage	3%

When asked whether they talked about their fears to someone in the family, 67% said they related their feelings to one or another parent. Ninety-seven percent of the children reported being told what they should do by an adult, usually by their parents.

When asked to compare their own reactions to those of peers and others, a majority of the children (73%) perceived their reactions to be the same as others. The majority of children (80%) reported that talking about the earthquake made them feel better. Three to five months after the earthquake occurred, 87% of the children were still thinking about the event and 40% were still feeling frightened.

CLINIC SAMPLE

Sixteen families sought crisis counseling for post-earthquake reactions. The reasons they gave for seeking counseling included the following: sleep disturbances (25%), and parents unable to cope with their child's problems (20%). Other reasons given were: to alleviate problem, child sought help, child was already in counseling, child persistently talking about the quake, change in child's personality, and the child's fear of being alone.

The clinic services they received were primarily group intervention (80%) and individual counseling (20%). These services were regarded by 62% of the parents as being considerably or moderately helpful in dealing with earthquake-related problems. Sixty-six percent of the parents felt they were then better able to handle their children's reactions. The parents who sought clinical services indicated that they would seek clinic services in the future.

Ten of the families included in the sample received services at a child guidance clinic located approximately 30 miles from Whittier, where the earthquake and its aftershocks were also felt, albeit at a lower intensity. These families attended a one-time "earthquake crisis group" led by trained mental health professionals.

The following table compares the parent reported post-earthquake behaviors of children in the Whittier and San Fernando Valley subsamples in the t-1 (immediately following the earthquake) and t-2 (3-5 months later) periods:

<u>BEHAVIOR CHECKLIST*</u>	<u>WHITTIER (N=20)</u>		<u>SFV (N=10)</u>	
	t-1	t-2	t-1	t-2
<u>Learning Problems</u>				
Short Attention Span	40%	30%	50%	30%
Inattentive	10%	10%	50%	20%
Underachieving	15%	15%	30%	20%
Truancy	5%	5%	10%	0%
<u>Moods</u>				
Withdrawn	15%	15%	40%	20%
Depressed	25%	15%	60%	30%

Habit Disorders

Nail Biting	40%	45%	30%	20%
Lying	10%	10%	20%	20%
Eating Problems	15%	10%	50%	10%

Behavior Problems

Hyperactive	10%	10%	40%	20%
Demanding	10%	10%	50%	40%
Bossy	10%	10%	30%	20%
Fighting	15%	15%	30%	40%
Argumentative	25%	25%	50%	40%
Does Not Obey	25%	25%	40%	30%
Accident Prone	5%	0%	30%	30%

Sleep Problems

Nightmares	40%	10%	60%	20%
Sleep Disturbances	60%	30%	70%	60%

<u>Specific Fears</u>	35%	35%	90%	80%
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* Results do not total 100%

The earthquake crisis groups at the child guidance clinic focused on the children's fears, management of the child's behavior, and therapist recommendations regarding effective parenting. Art therapy was used to elicit the child's feelings. Parental fears were often seen as affecting the child's adjustment. Referrals were made for further clinical interventions, when appropriate. It can be conjectured that the earthquake and the behavioral sequelae precipitated help-seeking among a group of parents who were having difficulties coping with their child's behavior.

Case Histories

Following are case studies of children who attended the post-earthquake crisis group. These cases present reactions of the children:

Girl - Age 9

After the earthquake, she had trouble sleeping at night. During the daytime she refused to stay in her room alone, wouldn't leave her mother's sight and would not go to the bathroom by herself. Mother reported feeling overwhelmed as she was also busy nursing the girl's 4-month old brother. Mother and daughter attended one group therapy session. Both felt relieved to find out that several other 9-year olds in the group had been manifesting similar fears. The girl's fears have now subsided.

Girl - Age 7

When the earthquake struck, she was practicing the piano. Subsequently, she feared approaching the instrument. She also had difficulty sleeping and her general behavior was markedly more dependent than it was prior to the earthquake. The girl clung to her mother and often cried when mother left her with the babysitter. A few weeks following one group session, mother reported gradual improvement. The girl seemed more confident. She still refuses to practice the piano. However, mother believes that she will start doing so in the near future as her anxiety has diminished noticeably.

Boy - Age 11

After the earthquake, he worried about the "next one coming". He refused to ride elevators. He worried constantly about being away from his parents when the "big one strikes". Since several other changes had taken place in his life, that is, moving to a new neighborhood and new school, the mother was advised to wait a few weeks and observe the child. Recommendation was made to seek therapy if fears continue.

The following cases were not included in the survey because of the age of the child. However, we are including them as illustrative material:

Girl - Age 1 Year 11 Months

Since the earthquake she had been unwilling to sleep in her own crib. She screamed, jumped out, ran to her parents bedroom several times a night. According to her mother, neither she nor her parents had slept well in weeks. They were losing patience, and had even spanked the girl once, and felt very guilty about it. Mother did not want to feel angry at the child, but felt she needed respite from what she perceived were overwhelming problems at home. She had tried to follow the advise of psychologists but "nothing worked".

Mother attended one counseling session with the child and felt better, being able to complain and express frustrations. The following day, she and her husband bought the child a new bed and the child's fears subsided.

Boy - Age 4

The child would not go to or stay in his room at night. Mother had to sleep on the floor in his room to keep him there. When she and her husband went to the bedroom at night, the boy followed. She tried to lock the bedroom door, but he child became hysterical, nearly breaking the door. The boy was afraid of monsters in his room, and afraid that his mother was going to leave him.

It is possible that the child was reacting to other fears which were triggered by the earthquake, but which have more to do with the fact

that his mother had just remarried. If the child's fears do not subside in the next few weeks, recommendation was made that the family apply for assistance to the clinic.

Girl, Age 3 Years, 6 Months

The girl had been "devastated" by the earthquake. She was afraid of "everything". When the earthquake occurred, there was an electrical outage and the television went blank. Since that time she had been afraid every time that the television is turned off or even channels changed. At the time of the earthquake, she was eating her morning snack. Subsequently she would not eat any snacks, apparently associating them with the scary event.

Eight days later, some of the above symptoms still continued, but less so and the girl was now happy again, going to school without any problems. Mother feels that what helped was engaging her in drawing and talking about the earthquake and her feelings.

Boy - Age 5

The child wouldn't go to his room without someone going with him. On overcast days or at night time he wouldn't go in at all. He imagined monsters in his room. In his school class he covered his head with hands at the mention of the earthquake. He was helped to draw and to talk about the earthquake in a group with other children who had similar fears. His problems diminished rapidly and practically disappeared in a few weeks.

Girl - Age 3 Years, 6 Months

The girl was afraid to be anywhere in the house without her parents present. Parents were finding the situation "impossible". Hours before she went to sleep she made sure her parents would be there. Mother was "at her wits end" and she had started scolding child, which only escalated the problems, but she "couldn't stop herself".

Mother was helped in accepting her daughter's fears and listening to them while at the same time being firm, and encouraging the child to resume her prior level of adjustment and mastery. Symptoms disappeared within a few weeks.

Boy - Age 3 Years, 6 Months

Since the earthquake, the boy had been acting up at school. He was frustrated, upset, refusing to share anything with other children and showing open anxiety. He often hit other children and was oversensitive to noises. When lights were out at school, because of a short circuit, he had a temper tantrum in the classroom.

Closer examination of the home situation revealed that the child was reacting to many other factors, that is, illness of his mother and

grandfather, and a recent move to another house. A decision was made to focus on helping him with these fears and indeed, when they were dealt with, the earthquake fears disappeared.

DISCUSSION

In this pilot study of reactions to the Whittier Narrows Earthquake, 60 individuals (30 adults and 30 children), were interviewed. A comparison was made of families residing near the epicenter in Whittier with those receiving services at a child guidance clinic located in the San Fernando Valley, 30 miles from the epicenter.

The analysis of the reported traumatic effects of this earthquake revealed that almost all of the children did not recognize the event to be an earthquake. This response is particularly interesting since preparedness activities such as drills had been taking place at the schools and television specials on earthquakes had recently been presented.

The earthquake was a frightening event to parents and children. The majority of the adult respondents viewed another major earthquake as a possibility; the prospect of another type of major disaster, however, was held as minimal. The media, particularly television, was the primary source of information following the event.

Two-thirds of the children reported that they sought emotional support from their parent(s) and told them of the fears. Parents took charge and instructed their children what they were to do. Ventilating their feelings and talking about the event to their parents was reported as alleviating their fears. Although three to five months later, almost half of the sample were still feeling frightened and most of the children were still having intrusive thoughts; that is, they were still thinking about the earthquake. Other frequently reported post-traumatic effects on the children were sleep problems and specific fears. Although these reactions appeared to diminish over time as well, they persisted in almost half the overall sample. It is important to note that several aftershocks had occurred during this period. There were also reminders, in Whittier particularly, of the damage caused by the earthquake.

Families who sought clinic services in an area distant from the epicenter seemed to represent a more troubled population with more persistent fears.

In comparing the responses of the Whittier sample with those of the San Fernando Valley clinic sample, we found that the latter had a higher percentage of reported disturbing behavior in the period immediately following the earthquake. We are aware that a selective factor is operating, as the parents sought clinical intervention because of symptoms their children manifested.

These findings are consistent with the 1972 study of post-earthquake reactions of families using clinic services at this same clinic. In that study, clinic families also reported a higher level of symptomatology in their children than the non-clinic controls residing in the same geographic area. Consistent with the findings of the 1972 study is the persistence of specific fears and sleep disturbances.

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