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QUALITATIVE ANALYSIS OF COPING STRATEGIES AMONG MEXICAN DISASTER SURVIVORS

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This study describes the various coping strategies reportedly used by survivors after a disaster. Using unstructured interviews, 27 Mexicans (16 women, 11 men) were asked to recount how they coped with a specific disaster and its aftermath. Interviews were carried out in three cities: Guadalajara, Jalisco ($n = 10$), Homestead, Florida ($n = 6$) and Puerto Angel, Oaxaca ($n = 11$). Guadalajara experienced a neighbourhood sewer explosion, whereas Homestead and Puerto Angel experienced Hurricane Andrew and Hurricane Paulina, respectively. Analysis of common themes revealed seeking support, seeking meaning, problem solving, and avoidance as primary coping strategies in all three cities. Seeking support was the most commonly cited coping strategy. Seeking support may be a universal coping strategy for disaster survivors, whereas other coping strategies varied by context-specific factors such as type of disaster, resource availability, and stage of disaster recovery. Implications for future coping research and interventions are discussed.

Keywords: Disaster; Coping; Qualitative analysis; Mexican

Over the past three decades there has been increasing interest in the concept of coping. Several definitions and classification systems of coping have been proposed (e.g. Costa *et al.*, 1996; Hobfoll, 1998; Hobfoll *et al.*, 1994; Holahan *et al.*, 1996; Lazarus and Folkman, 1984). Lazarus and Folkman (1984) defined coping as an individual's "efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (p. 141). This frequently cited definition focuses on how the individual interprets his or her situation and how he or she behaves in response to a particular stressor. This study examines the extent to which individuals' perceptions and coping behaviours occur in isolation from the broader context of their experiences, specifically in the aftermath of a disaster.

Rather than focusing on coping as a solely individualized process, Hobfoll (1998) recommended an *individual-in social context* perspective. According to this perspective, it is important to consider "the social, interdependent nature of coping" as well as its individualistic aspects (p. 121). By acknowledging the collectivistic or sociocultural

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nature of coping, Hobfoll broadened what has traditionally been a narrow view of the process of coping and provided a framework for examining how people from collectivistic cultures may cope in the face of stressful situations.

This recent interest in the social aspects of coping has focused mainly on support seeking (Carver *et al.*, 1989). Researchers have found that support seeking is a critical aspect of people's coping responses (Endler and Parker, 1990; Kaniasty and Norris, 1993). In fact, active, prosocial coping strategies such as seeking support were found to be related to less psychological distress (Hobfoll *et al.*, 1996). Social coping may also include coalition building, social joining, and protecting others (Hobfoll *et al.*, 1996). Until recently, however, coping measures did not assess these social aspects of coping.

To address this gap in the literature, Hobfoll (1998) proposed a multi-axial model of coping, which posits that all coping behaviours fall on three axes. The *active–passive* axis denotes the extent that a coping strategy is action-oriented in responding to the problems confronting an individual. The *prosocial–antisocial* axis refers to the extent that one interacts with others in order to cope with a situation. The *directness–indirectness* axis refers to whether the coping activity is directly or indirectly applied to the problem. This model attempts to address cultural biases found in an individualistic perspective of coping by stating that coping strategies will fall somewhere along these continuums depending on the context. For example, the axis of direct-indirect coping may be particularly relevant to collectivistic cultures, such as Mexico, because indirect behaviours are viewed as a way of allowing others in stressful situations to preserve their honour (Triandis *et al.*, 1990).

In general, Northern European and American cultures are described as individualistic (Matsumoto, 1996; Triandis, 1995). These cultures are thought to be more concerned with self-reliance and independence, focusing on individual needs. In contrast, Mexican culture is typically described as collectivistic, focusing on community solidarity and interdependence (Matsumoto, 1996; Triandis, 1995). Whereas individualistic cultures focus on individual needs, collectivistic cultures focus on preserving the integrity of the collective and maintaining interpersonal relationships.

However, this is not to suggest that individualistic cultures do not sometimes experience collectivistic coping. On the contrary, individualistic and collectivistic coping styles fall on a continuum and each will be found in all cultures (Hobfoll *et al.*, 2002). For example, research has shown that women are more likely than men to report interconnectedness with others and to see their actions using a social perspective (Helgeson, 1994). The United States, which is considered an individualistic culture, may display collectivist cultural themes through the influence of its collectivistic subcultures (e.g. African Americans and Jewish Americans) (Fukuyama, 1995). Another study focused on several different populations within the United States and found that both individualistic and collectivistic coping strategies were used (Hobfoll *et al.*, 2002). However, the majority of studies that place coping strategies on an individualistic-collectivistic continuum tend to have been conducted within an individualist culture (Fukuyama, 1995; Hobfoll *et al.*, 2002). Little is known about how coping strategies may vary on the individualistic-collectivistic continuum within a mainly collectivistic culture (e.g. in Mexico), or how coping strategies may vary for immigrants who may have a collectivist orientation but live within an individualist context (e.g. Mexican immigrants).

The existing literature on coping within Mexican culture is limited. Studies tend to focus primarily upon Mexican populations living in the United States, using instruments developed by non-Mexican researchers working primarily with populations in developed countries (e.g. Codega *et al.*, 1990; Parra *et al.*, 1995; Vega *et al.*, 1988). However, Mexican Americans may differ culturally from people living in Mexico based on their level of acculturation, or how many generations have lived in the US. Therefore, the results of these studies may not generalize to Mexican populations living outside the United States. Furthermore, the current literature on coping within Mexican populations in the aftermath of natural or technological disasters is almost non-existent (for an exception, see Gavalya, 1987).

Disasters are examples of stressful situations that may challenge not only the individual but also communities' ability to cope with what can be unexpected and sudden stress. Each year, disasters affect approximately 117 million people living in developing countries, such as Mexico, compared to approximately 700,000 people living in developed countries, such as the United States (DeGiralomo and McFarlane, 1996). This represents a ratio of approximately 166 to 1. Despite the fact that developing countries are more likely to experience the impact of disaster, research on the consequences of disasters are conducted primarily in the developed countries of the United States, Australia, and Northern Europe (Carr *et al.*, 1997; Kaniasty and Norris, 1993; Smith *et al.*, 2000). Research that includes the experience of developing countries is needed in order to address needs and experiences of all disaster survivors.

The Present Study

This exploratory study was conducted as a first step towards planning subsequent epidemiologic research on trauma and disasters in Mexico wherein we sought to have Mexicans describe their feelings, helping efforts, and coping in their own terms. Although social support in Mexico was a major interest of the research project, we also wanted to know the coping strategies used in response to disasters among Mexicans. In order to begin to address the paucity of research in the area of coping within Mexican communities following disasters, the present study focused on coping strategies used within three communities that were each sites of natural and technological disasters – all Mexican, with two in Mexico and the third an immigrant community in the United States. Qualitative methodology was employed for several reasons. First, qualitative methodology can address questions about the meaning of events and activities of the people involved, as well as questions about the influence of the social context in which these activities occur (Banyard and Miller, 1998). Second, qualitative methodology allows for examination of various ecological (i.e. social, political and sociodemographic) determinants of behaviour (Trickett *et al.*, 1985). Given the limited research in this area, it was important to consider several possible contextual variables that could affect coping following a disaster. Finally, qualitative research methods can lay the groundwork for the development of culturally-anchored quantitative methods and measures (Maton, 1993).

To this end, the present study sought to address the following basic research questions within the context of these three communities: (1) What strategies did people in Mexican communities use most frequently in coping with a disaster situation; and (2) What were the similarities and differences in the coping strategies cited among the three cities. Although this is an exploratory study, we expected that all three Mexican

communities would frequently use prosocial coping. We further expected that both communities in Mexico would report more prosocial coping than the immigrant Mexican community in the US due to immigrants' usually having smaller social networks as well as a language barrier. Finally, we expected that all three Mexican communities would report indirect coping styles.

METHOD

Recruitment and Interviewing Procedures

In-depth unstructured interviews were conducted in three cities that experienced major disasters: Guadalajara, Mexico ($n = 10$, sewer explosion), Homestead, Florida ($n = 6$, Hurricane Andrew), and Puerto Angel, Mexico ($n = 11$, Hurricane Paulina). Interviews were conducted in Guadalajara in June of 1997 and in Homestead in September of 1997, five years after the respective disasters. In Puerto Angel, interviews were conducted in January of 1998, approximately 3 months after Hurricane Paulina. Informants were all from working class neighbourhoods. Specific ages were not obtained, however, ages ranged from early 20s to late 70s. All interviews were conducted in Spanish.

Interviewer teams consisted of bilingual interviewers: three anthropologists and two psychologists. At least one anthropologist and one psychologist were paired up as one interview team. Interview teams consisted of two to three interviewers. The same interviewers were used for all cities although the pairing was sometimes different. Each interview team paired expertise in conducting qualitative interviews with expertise in conducting interviews where the subject matter contained emotional material warranting clinical training. All interviewers received training from a nationally reputable consultant on how communities may respond in the aftermath of a disaster. The purpose of the training was to inform interviewers on what they might find in the field. Debriefing occurred among the interviewers after each day of interviews to discuss issues seen in the field, but the debriefings did not result in protocol modifications.

The interviews lasted approximately 45 minutes to 2 hours. In Guadalajara, informants (four men and six women) were recruited in several ways: recruitment by colleagues at the *Universidad de Guadalajara* that were familiar with the affected communities, by investigators walking through the disaster-stricken neighbourhood and spontaneously interviewing residents, and through participants named by the first few interview subjects. They all lived in the neighbourhood that was destroyed by the explosion. In Homestead, Florida, three men and three women were interviewed regarding their experiences during and after Hurricane Andrew. These informants participated in a previous study (Kaniasty and Norris, 2000) and were contacted again for these interviews. In Puerto Angel, seven women and four men were interviewed. The interviewers went to the areas that were most affected, walked around, and spoke to people about the disaster. Once accepted by the immediate community, interviewers would ask for a lengthier interview with survivors that were interested in sharing their experiences.

After introducing themselves and their purpose, interviewers would begin by asking the question, "How did the disaster affect you and others who lived here?" This is what Spradley (1979) called the 'grand-tour' question. It is broad, general and not very

threatening. It can also give the interviewer clues about other questions to ask later in the interview. Disaster survivors for the most part welcomed a chance to talk about their disaster experiences. Interviewers established rapport through lengthy informal conversation about the event and showing genuine interest in their stories.

There was no set list of established questions. The interviewees were allowed to guide the interviews in the sense that questions varied based on the informants' previous answers. There were, however, general areas of interest, which interviewers attempted to probe for information (e.g. describing the event, coping in the aftermath). Interviewers used different types of descriptive questions such as *example* questions and *experience* questions. *Example* questions included: "Can you give me some examples of how others helped you?"; "What helped you recover?" *Experience* questions simply asked informants for any experiences they had in a particular situation, such as "Describe your experience dealing with daily life after the disaster?"

Data Analysis

All interviews were transcribed verbatim in Spanish and later translated into English. Translators were graduate students that were fully bilingual, Native Spanish speakers from Argentina, Cuba, and Colombia. There were approximately 1,000 pages of single spaced text. Once the interviews were transcribed verbatim in Spanish and translated in English, the data were coded and analysed. The analysis consisted of three phases. In *Phase 1*, three to six coders read each interview independently. The data were reviewed for any references to coping with the disaster. Coping was operationally defined as "the respondent's efforts to try to manage the demands produced by the disaster." For the purpose of isolating variables for this study, help seeking behaviour, as a coping strategy was distinguished from unsolicited social support that was offered or inherent in the community's typical way of relating. Because the data also included references to social support, we were careful to distinguish any social coping from merely receiving social support by only analysing references to respondent's actively seeking support. That is, references to receiving social support were not considered examples of coping unless the respondent purposely sought out the support. Within the general category of "coping", coders included all narratives from each interview that included references to coping. The length of a narrative describing coping strategies would vary.

During Phase 1 of coding, the team would meet as a group and review that week's interview in order to arrive at a consensual agreement regarding whether a particular narrative included references to coping and belonged under that category. If there were disagreements, the group would discuss the issue until there was a resolution. Percentage agreement among coders was very good (88%). Finally, three interviews were randomly selected from each city in order to verify linguistic equivalence. Half of the coders would code these interviews in English, while the other coders did so in Spanish. Coder agreement was also high (81%) suggesting that the translations were linguistically and conceptually equivalent.

In *Phase 2*, after all interviews were read and data were organized by coping references, two teams of coders would review each narrative again for specific types of coping strategies. The coders independently labelled the types of coping strategies used and any other qualifying remarks that were of interest pertaining to coping efforts. Afterward, the team met and reached consensus on coding decisions. The teams

periodically changed members to prevent drifting by one team when coding. The coders wrote down the most frequently mentioned coping strategies within each narrative.

In *Phase 3*, coders counted each coping strategy and the number of informants that reported each coping strategy. The coping strategies most often cited by respondents were the main findings for that city. Specific instances (and quotes) verifying the main findings *within each city were then collected*. The criterion for being a main theme was that over half of the respondents in each city mentioned using a particular coping strategy. Coders also reviewed all the key findings *across the three cities* in order to find similarities and dissimilarities in coping strategies.

RESULTS

There were four recurrent themes that emerged from the analysis: seeking support, seeking meaning, problem solving, and avoidance. The first recurrent theme, *seeking support*, involved actively seeking support from others (e.g. emotional, informational, and tangible support), expressing emotion with others, providing support to others, and using humour with others. Second, *seeking meaning* involved efforts to make sense of the event, using religious or spiritual guidance in order to feel better, attempts to discover what is important in life, efforts to change the perception of the stressor in a positive way, and the belief that something had been learned from the experience. *Problem solving* involved active efforts directed towards the solution of a problem (instrumental action), exercising caution, and negotiation (efforts to change another person's mind, bargaining, or compromising to get something positive from the situation). Finally, *avoidance*, involved efforts to refuse to dwell on the problem, distracting oneself, exhibiting a stoic attitude towards life, or using emotional distancing, rationalization, fantasy, or substance abuse in order to cope with the aftermath of the disaster. Excerpts illustrating the top three recurrent coping strategies within each city are presented, as well as the number of informants that reported use of the strategy. Although over half of the informants in each city may have mentioned a type of coping strategy, the focus was on how many times a particular category of coping strategy was mentioned. For example, in Guadalajara, although six out of ten informants mentioned problem-solving strategies, only 11% of all coping strategies mentioned by interviewees in Guadalajara actually involved problem solving. A brief description of other, less frequently mentioned strategies that did not fall within the four recurrent themes, are also presented at the end of each section.

Guadalajara, Mexico

Guadalajara has a population of over 3 million and is the capital city of the Mexican State of Jalisco. In April 1995, a large sewer main below the street level exploded due to accumulated gas from gasoline and other solvents. The explosion blew 22 streets completely wide open and destroyed one side of 98 blocks. It opened the streets above, throwing people and cars into the air. Due to the lack of foundations, many houses next to the wide trench collapsed burying more people in debris. It was difficult to obtain exact figures of the number of victims and the loss of property. Official records reported 210 killed and 1,480 injured. However, newspaper reports estimated the death toll somewhere from 252 to 700, with 2,000 injured (Esparza, 1997).

Analysis of ten interviews conducted with Mexican men ($n = 4$) and women ($n = 6$), living in Guadalajara revealed that the three most common types of strategies mentioned were seeking support, avoidance, and seeking meaning, respectively.

Seeking support (9/10 informants) Forty-four per cent of all coping strategies referred to seeking support as a way to cope following the disaster. In describing the aftermath of the sewer explosion and efforts towards coping with the massive damage and significant loss of life that occurred, informants indicated that most people turned to each other for support rather than professional services. Through talking about the event with others or working to help other survivors in the community, the informants found some relief from the tensions and anxiety that they experienced following the disaster. A male informant described ways in which he and other members of the community found relief from the tensions following the explosion through the use of informal community gatherings.

> Something that we used [were] soirees. The situations were greatly relaxed during the evenings in the sense of being able to have collective gatherings. Each person would talk about how it had been for them after the explosion, as well as discuss funny situations they experienced. That would make for a bit more of a relaxed ambiance.

A female informant described emotional support obtained through interacting with others in the community. She also suggested that interacting with others after events such as disasters was common in her community.

> We Mexicans are like that. We talk to our neighbours when things like [the explosion] happen. I remember that after the explosion we would ask each other what we needed or what we wanted.

Avoidance (7/10 informants) Twenty-five per cent of all coping strategies involved avoidance of situations or discussion of the explosion. While some in the community found talking about the event to be helpful in coping with loss, others preferred to try to distract themselves from the experience or avoided reminders all together. A female informant discussed how she and her friend used distraction to help them cope with the explosion.

> I would distract her by talking about different things so she would not have the same suffering over and over again. If you talk about it, then it never ends.

In another example of how residents used avoidant coping strategies, an interviewer and another female informant discuss how the informant coped with her feelings of sadness by distracting herself with entertainment.

> *Q*: What helped you in your sadness?
> Oh, there was music, there was theatre, dances, clowns. Yes, there was a lot of entertainment.
> *Q*: And that helped?
> Yes. Yes it did.

Seeking meaning (6/10 informants) Twenty-one per cent of all coping strategies involved efforts to find meaning in the situation. When confronted with the losses incurred following the explosion, many attempted to determine why the event may have

occurred, as well as considering loss in comparison with what was not lost. A female informant described how she was comforted by considering what was not lost after the explosion, and how she has a greater appreciation for what she has because of what others in her community lost.

> Of the two evils, it was best that nothing happened to [the neighbours] or to their family directly. The material is replaceable. I feel that we appreciate what we have more because others lost family members and, in comparison, we have lost nothing.

Other types of strategies mentioned A few informants described folk healing as a form of coping following the sewer explosion. Unlike seeking meaning, these coping strategies were based on symptom relief rather than attempting to understand why the event occurred. One informant believed her deceased husband's spirit was whispering in her ear because he had not confessed before his death. This made the woman quite nervous. In order to address her anxiety, the woman sought out a priest to whom she confessed her sins. The priest also forgave her husband's sins and concocted an elixir made of various herbs to aid the woman in reducing her anxiety. She reported that the "medicine" was very helpful. Another informant believed that her response to the event was due to a hex. She visited a folk healer who removed the hex, resulting in improved sleep and mood.

Homestead, Florida, USA

Hurricane Andrew struck Homestead, Florida with violent winds and storm surges characteristic of a Category 4 hurricane. Homestead, a city in South Dade where 27,000 residents lived at the time of the disaster, was directly in the path of Andrew. Most of the residents of Homestead were renters with modest or low incomes. Latinos made up 35 percent of the population, which included many Mexican immigrants (Peacock *et al.*, 1997). The force of Andrew resulted in 15 deaths, and left up to 250,000 people homeless. An additional 25 lives were lost from the indirect effects of the hurricane (e.g. falls, fires and cleanup accidents) (Rappaport, 1998).

Analysis of the six interviews conducted with Mexican immigrant men ($n = 3$) and women ($n = 3$) living in Homestead, Florida revealed that the three most common types of strategies mentioned were seeking support, seeking meaning, and avoidance, respectively.

Seeking support (6/6 informants) Thirty-six per cent of all coping strategies mentioned by informants in Homestead related to interacting with others. A male informant described how one of his teachers facilitated discussion of the hurricane and how that discussion benefited him and others in his class.

> When the hurricane happened, I was in elementary school. Our teacher would gather us with a group of people and would have us talk about the hurricane and what we went through. We would talk about everything, and that made us feel much better.

In another example, a female informant described how the community worked together to cope with the aftermath of the hurricane, and how residents offered support to one another.

> When something like this happens, one gets to meet with everyone. With everyone you meet, you recount what happened. You also say, 'Look I have something you need. If you don't have it, then I will help you.' We were taking care of each other ...sticking with each other to stay united.

Seeking meaning (6/6 informants) Thirty-three per cent of all coping strategies involved efforts to find meaning in the disaster. A male informant described the importance of God and religion in helping him and his community cope following the disaster.

> I think God took care of us ... I thank God because He is why we are alive, and He has helped us to feel better [after the hurricane] and to be happy with what we have.

While some in the community turned to religion and spirituality for comfort, others also felt that the hurricane was retribution by God or was a sign from God that the community needed to change its ways. A female informant described how she believes that God sent the hurricane as punishment for evil.

> I know God sent us this thing as punishment, but we survived ... I would tell my sister, "Maybe God sent us this, you know". Why would he do that? Was it because there is so much evil, so many drugs, so many killings, so much violence in this world? Why us? That's what I think.

Avoidance (5/6 informants) Seventeen per cent of all coping strategies involved avoidance. Types of avoidant coping strategies mentioned by informants ranged from minimization of the impact of the event, to avoidance of discussions related to the event, to activities that served as distractions for the individual. A female informant described her husband's efforts to minimize the impact of the event on his life in order to exhibit strength for his family.

> You know the man always has to be stronger. He always has to pretend. Although he is dying inside, he has to appear to be strong. At least that is true in the case of Mexicans ... Everybody has to demonstrate courage. [My husband] demonstrates courage for his family. He might feel like he doesn't know what to do, but he would instead go out of his way to do this and that and stay active so he could appear courageous.

A male informant finds it difficult to discuss the event because it frightened him so much, and states he avoids thinking about the disaster.

> The wind would push us backwards, and we would fight against it. I do not even want to remember because it still gives me chills.
> *Q*: Until this day?
> Oh yes, until this day because it was very hard. I do not want to remember because it was very hard ... I do not want to remember the hurricane, and it has been 5 years.

Other types of strategies mentioned Responses that indicated informants were experiencing self-blame were found. A male informant described how he ignored warnings about the hurricane and that was why it did so much damage to his property. In addition, a female informant described folk healing rituals that were used to decrease *el susto* (the fright). She described brushing the man with herbs and praying for him in order to cure the man's soul so it might return to his body after being frightened away.

Puerto Angel, Oaxaca, Mexico

In October 1997, Hurricane Paulina drenched Mexico's pacific coast causing deadly floods and mudslides. At least 250 people were killed, twice that number were reported injured, and dozens were reported missing (*The Atlantic Constitution*, 1997). Interviews were completed three months after the disaster in the coastal communities of Puerto Angel and Coyula. There was heavy damage to both communities.

Analysis of the 11 interviews conducted with Mexican men ($n = 4$) and women ($n = 7$) living in Puerto Angel and Coyula revealed that the three most common types of strategies mentioned were seeking support, problem solving, and seeking meaning, respectively.

Seeking support (10/11 informants) Forty per cent of all coping strategies mentioned by informants in Puerto Angel/Coyula were related to interacting with other community members following the disaster. People described how they turned to each other for support in the aftermath of the hurricane. Below, a female informant describes how she accessed support from her neighbours by talking about the event. In addition, she and her neighbours worked together to remove debris from each other's property.

> We often looked after each other, and I remember that I went to one of their houses and we began to talk and they asked me what happened and how my house was, and other things like that. They organized themselves and a group of about ten began to remove debris.

Problem solving (11/11 informants) Thirty-six per cent of all coping strategies mentioned were about problem solving activities. Below, a male informant describes how people in the community coped with the tangible losses of resources, such as food, following the disaster. Note the use of the word "we", signifying the importance of solving the community's problems rather than addressing individual concerns.

> We ate the only thing that was available here, and that was fish. We slowly began to recover.

In the following excerpt, another male informant describes how he and others addressed the problem of unemployment following the disaster.

> So many of us were out of work. We later made the presentation of a plan to be able to put people back to work immediately.

Seeking meaning (6/11 informants) Fourteen per cent of all coping strategies mentioned attempts to find meaning in the event. Informants described the use of prayer and other rituals to help cope with the disaster's effects. Below, a female informant describes the use of prayer as well as her view of why hurricanes occur. Supplying meaning to the event in this way aids her in understanding and coping with the losses she and others in her community experience due to disaster.

> We are evangelical. We prayed to God. These hurricanes are part of what will happen at the end of the world. It is written that Jesus' coming is near. We know this because of the prophecy that Earth and Heaven will pass, but His word will last forever ... Everything that occurs is God's will.

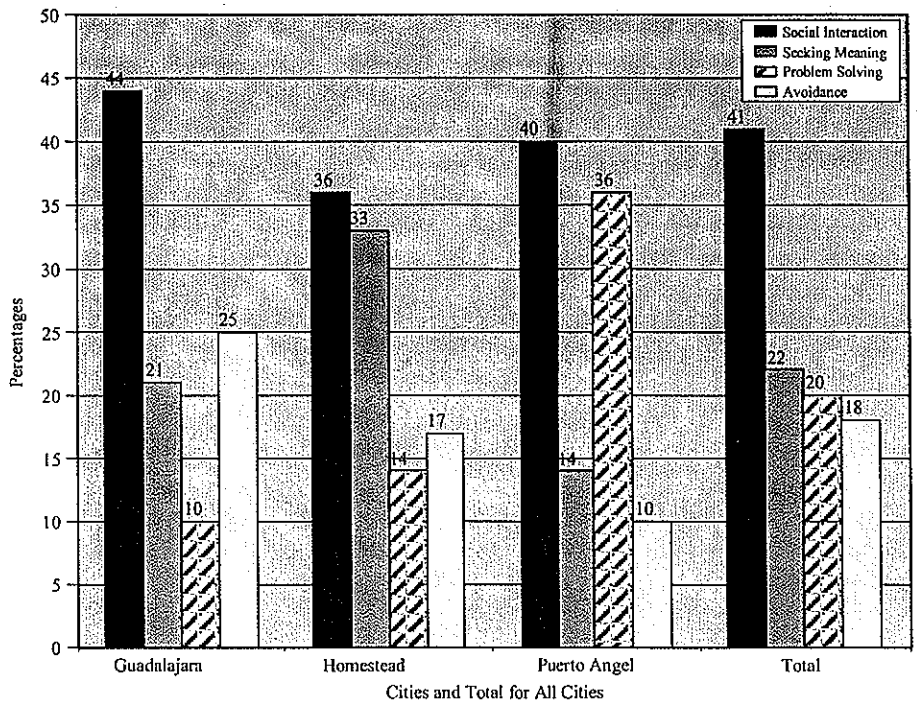

FIGURE 1 Percentage of responses indicating use of four main categories of coping strategies by city and the total percentage of responses from each category.

Other types of strategies mentioned A female informant described feelings of self-blame following the floods. She discussed actions that she could have taken that could have reduced the extent of the damage she experienced.

Similarities and Differences across Cities

Once the emergent patterns within each city were evident, we examined which types of coping strategies were evident across the three cities. Figure 1 illustrates the similarities and differences that were found between each city. Informants from all of the communities mentioned seeking support most frequently when describing coping strategies. Informants in all three cities described coping strategies that involved searching for information about loved ones, crying together, talking about the event, and taking care of each other. In addition, informants in all cities mentioned strategies that involved seeking meaning.

Although seeking support was the most prevalent coping strategy and seeking meaning was a significant finding in all three cities, there was some variation in the second and third most prevalent strategies for each city. In Guadalajara, there were more responses related to avoidance than seeking meaning, whereas the opposite was true in Homestead. In Puerto Angel/Coyula, more responses were related to problem solving than seeking meaning.

DISCUSSION

To our knowledge, this is one of the first qualitative studies to explore the issue of how Mexicans cope with disasters. By listening to the voice of the people affected by disaster rather than measuring coping with potentially inappropriate culturally biased measures, this study begins to identify the range of coping strategies that may be used in Mexico as well as Mexican immigrant populations in the US following disasters.

Analysis of the coded interviews revealed that seeking support, seeking meaning, problem solving, and avoidance were present in all three cities, with seeking support being the most often cited coping strategy in each city. All four themes fell on different axes described in Hobfoll's (1998) Multi-Axial Model of Coping. Two of the four coping strategies were active, prosocial, and direct (seeking support and problem solving), and one was passive, anti-social, and indirect (avoidance). The last theme, seeking meaning, is not represented in Hobfoll's model but rather emerged from our own data as a coping strategy.

Informants in all three cities described socially-focused coping strategies (e.g. seeking support). One explanation is that interaction with others who have experienced the disaster or with people who provide aid is, in all likelihood, inevitable. In addition, this finding supports previous disaster research that has shown that survivors typically rely upon local support systems, such as families, friends and neighbours (Bolin, 1982; Solomon, 1986). This pattern has also been noted in different ethnic groups in the United States, including Latinos (Kaniasty and Norris, 2000). In addition, the little research that has been done on coping in Mexican populations living in the United States suggests that close friends and family are an important source of support when confronted with a stressor (Codega *et al.*, 1990; Parra *et al.*, 1995).

As we expected, the immigrant community was less likely to mention seeking support as a coping strategy than Guadalajara or Puerto Angel. One explanation for this finding may be that immigrant communities tend to have smaller social networks than in their country of origin, limiting the amount of support seeking by disaster survivors. There are also different aspects of support that may relate differently to coping. For example, although they may have a small social network, the immigrant community in Homestead experienced huge amount of formal support (e.g. Red Cross, FEMA). However, the immigrant community was Spanish-speaking and therefore had to deal with a language barrier in seeking formal support. Immigrant communities may have seeking support as part of their coping repertoire, but not be able to exercise that particular strategy because of language or other structural barriers. Future research should focus on the different sources of support (e.g. formal, informal) and types of support (e.g. emotional, tangible) available to disaster survivors, and how having these resources available relate to different coping strategies.

The second and third most prevalent strategies differed for each city suggesting that coping strategies employed by survivors will vary by contextual factors such as disaster type, the extent of damage or loss of life, the resources available, and stage of disaster recovery. It could be that after turning to others for support, which appears to be a universal or *etic* way of coping after disasters, people used various coping strategies to deal with context-specific demands. For example, in Guadalajara, the second most often mentioned coping strategy was avoidance. The disaster in Guadalajara involved greater loss of life than in the other two cities. This finding is convergent with the

disaster literature, which has found avoidant coping strategies common particularly after technological or man-made disasters (Arata *et al.*, 2000). According to Carlson and Dalenberg (2000), exposure to sudden and highly stressful traumas, such as disasters, activates core traumatic stress responses that include cognitive, affective, behavioural and physiological avoidance. The more intense the experience, the more likely it is that one will have a traumatic stress reaction involving avoidance. These avoidant responses are thought to keep the traumatic information in the unconscious and can result in a period of numbing and denial (Horowitz, 1986). Avoidance can be adaptive by reducing stress, increasing hope, and allowing short episodes of grief and distress that does not psychologically overwhelm the person (Gibbs, 1989). In general, avoidance seems to be a positive coping strategy for short-term stressors, and a negative one if used to disengage completely from the situation long-term (Suls and Fletcher, 1985).

An interesting finding from Guadalajara was the fact that some informants seem to use avoidance in social relationships; that is, respondents helped distract others from thinking of the disaster. This finding suggests that avoidance may not be entirely an anti-social construct as suggested by Hobfoll, but may also be a communal one. Perhaps avoidant coping strategies can be used in a pro-social manner by individuals distracting each other. Future research is needed to examine the different forms that avoidant coping strategies may take (e.g. antisocial–prosocial), and to what degree avoidant coping strategies vary within a mainly collectivistic culture versus an individualistic culture.

The second most often reported coping strategy mentioned in Puerto Angel/Coyula was problem solving. The impact of Hurricane Paulina in Puerto Angel/Coyula was remarkable in that there was a particular lack of tangible resources after the disaster struck (Ibañez *et al.*, 2003). People in this community may have used more problem solving coping strategies than people in the other two cities in order to meet their basic needs for tangible resources. Another explanation may be simply the timing of the interviews. The residents of Puerto Angel/Coyula, interviewed three months after the disaster, may have been still rebuilding and recovering their resources whereas Guadalajara and Homestead have had longer to not only regain resources but to try and make sense of their experiences. Future research should focus on how coping strategies may change as the community continues to recover with time.

In Homestead, the second most frequently mentioned coping strategy was seeking meaning. This finding is congruent with other studies that have found that survivors of traumatic events try to seek a higher meaning to their experiences (Frankel, 1962). Making sense of the disaster mostly through religious attributions has been reported among survivors after earthquakes in Armenia, a flood in the Midwest United States, and after the 1985 earthquake in Mexico City (Gavalya, 1987; Kalayjian, 1999; Smith *et al.*, 2000). One significant difference between Homestead and the other two cities in Mexico, is that after Hurricane Andrew struck, a sufficient amount of tangible support was mobilized such that survivors did not have to problem solve in order to meet their basic needs (Ibañez *et al.*, 2003). Seeking meaning could possibly be a higher level of coping that takes place once these basic needs are addressed. It could also be that seeking meaning is not an immediate coping response but a long-term coping response to a disaster. That is, the survivors had more of an opportunity to take the time (e.g. 5 years) to process the event and try to make sense of it. Future research should focus on

religious coping as a way of making sense of a traumatic experience, and how seeking meaning can be integrated into existing coping measures.

Strengths and Limitations

This study has several important strengths. First, the present study contributes to an area that is virtually untouched – the study of coping with disasters in the developing world. Second, the use of qualitative methods and analysis allowed the "voice of the people" to be heard and to guide future research that may be conducted in their culture. Another strength of the study was the inclusion of different types of disasters, varying in intensity and type (e.g. natural and technological disasters). Denzin and Lincoln (1994) recommended that concepts and theories be tested across populations. Because this was a multi-site study, the concept of coping is examined in terms of universality, similarity of dynamics, and transferability across different, yet similar, populations.

Although this study had several strengths, there were notable limitations. First, although both male and female informants were used, gender differences could not be analysed due to the sample size. In addition, the small sample size and the exploratory nature of the study strongly limit the extent to which the findings can be generalized to other populations. Third, the interview protocol was designed to explore social support as well as coping strategies. Although questions were asked about how the informants' coped with the situation, the focus on social support as well as coping may have affected the number of responses that indicated socially-focused coping. To address this potential bias, we coded only references of active support seeking and not general social support. Another limitation is that Guadalajara was the first city in which interviews were conducted and, consequently, the interviewing protocol was not as developed. In some instances, interviewers were required to go back to the informants and ask more questions. As a result, informants might have been more detailed and verbose about certain events than about others. In comparison, the interviewing protocol was fully developed in Homestead and Puerto Angel/Coyula, which may have resulted in more efficient questioning and less verbosity from the informants. There are also contextual influences that might account for some of the findings such as rural vs. urban, poverty, or level of education. In addition, past history of traumatic experiences may influence future coping in response to similar events. This information was not obtained in this study. Interviews were conducted 3-months post disaster in Puerto Angel/Coyula compared to 5 years post event in Guadalajara and Miami. The timing of the interviews may have produced recall bias. However, this also allowed us to examine the association between coping strategies and stage of recovery. Finally, when using qualitative methodologies, it is recommended that initial interviews be transcribed and studied before going for a second interview so as to verify initial findings with informants and to ask questions about information given in the first interview (Miles and Huberman, 1994; Spradley, 1979). These steps were not possible in this study due to time constraints.

Implications and Conclusions

The results of this exploratory study suggest that coping strategies among Mexican disaster survivors are similar to strategies used by other populations. Social coping was

prevalent among survivors regardless of the type of disaster. This suggests that social coping may be a universal or *etic* coping style among disaster survivors. Other coping strategies tend to be based on specific contextual demands, which may vary by disaster type, extent of damages and loss of life, resource availability, and stage of recovery.

Another implication of this study is the importance of finding meaning in the aftermath of a disaster. Coping efforts focused on trying to find meaning in the disaster were mentioned frequently by informants in each city. Future studies of coping behaviours after a disaster should examine the influence of spirituality and other meaning seeking behaviours in facilitating recovery in the aftermath of disasters. Moreover, coping measures may need to include items to assess this construct.

Intervention efforts should target both the immediate and long-term needs of disaster survivors. Seeking support, avoidance, and problem solving coping efforts appear to relate to a need to address the immediate impact of the event. Therefore, interventions in the early stages of recovery may need to address tangible and immediate emotional needs. Early mobilization of existing community resources, such as families, community organizations, and spiritual leaders, may serve to aid Mexican disaster survivors in sharing their experiences with others. Over time, survivors may need more assistance in making sense of the event. By sharing their experiences, the community may be able to construct its own meaning surrounding the event.

In conclusion, this exploratory study represents a small, yet significant, move towards addressing the limits of the current literature on coping following disasters, particularly in developing countries.

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