A Social Stage Model of Collective Coping: The Loma Prieta Earthquake and The Persian Gulf War

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When individuals face an emotional upheaval, they naturally talk and think about it. If they are unable to talk with others but continue to think about the event, they are at greater risk for a variety of psychological and health problems. Drawing on survey data gathered from San Francisco residents after the Loma Prieta Earthquake and from Dallas residents during and after the Persian Gulf War, we found evidence to support a social stage model of coping. Immediately after an upheaval, individuals openly talk and think about the event for approximately two weeks. Following th's emergency stage, individuals progress into an inhibition stage wherein they stop talking about the upheaval but continue thinking about it for approximately six weeks. Certain indicators of distress, such as hostility and dreaming, peak during the inhibition phase. After this time, people enter an adaptation phase wherein they neither talk nor think about the upheaval. Implications for theory and interventions for both broad-scale collective upheavals as well as personal traumas are discussed.

A psychological upheaval, whether it affects a single person or an entire culture, provokes a number of well-documented effects. Typically, individuals

experience a complex array of emotions and recurring thoughts about the event. Cognitively, people attempt to understand the event and decide on effective responses to it. Most research on psychological upheavals has focused on individuals' reactions to a personal trauma, such as death of a loved one or rape. Although intrapsychic struggles are central to victims' recovery, they are, however, not the only important coping challenge. *Interpersonal* problems also arise following trauma, and the manner in which these are negotiated can profoundly affect the course of recovery. For example, the social challenges of coping include identifying care givers to whom difficult emotions and troubling thoughts can be revealed; overcoming feelings of shame, embarrassment, and guilt that can inhibit therapeutic disclosures; assessing care givers' capacity for support; and adjusting one's own disclosure needs to supporters' empathic tolerances (Coates, Wortman, & Abbey, 1979; Harber & Pennebaker, 1991, 1992).

Following disasters that affect whole communities, the social challenges of posttraumatic coping become more complicated still. Major catastrophes can simultaneously cast people as victims seeking support, and as sources of support sought out by other victims. The problems arising from these contrasting social roles, multiplied by the size of the affected population, may profoundly influence a community's postdisaster atmosphere. It is in this unique social climate that each victim's personal coping occurs. Consequently, the course of individual recovery can, to some degree, be shaped by the conditions that collective coping creates.

In this article, we examine the interplay between social dynamics and intrapsychic processes that follow in the wake of cataclysm. Based on our previous work with individual traumas and on the social psychological responses we observed following the Loma Prieta Earthquake, we posit that there are clear social phases in coping with a threatening national upheaval such as the Persian Gulf War. Our research, then, used United States residents' reactions to the war as a test case of our social stage model of coping.

The present article is divided into four sections. We first examine the normal ways by which people typically cope with an individual trauma, with special emphasis on the social dynamics of coping. We then focus on our previous work dealing with the collective ways by which people respond to a natural disaster—specifically, the Loma Prieta Earthquake. In the third section, we summarize our primary findings concerning social stages of coping among residents of Dallas, Texas, in the months during and following the Persian Gulf War. We conclude with a general discussion of the advantages and problems of establishing a social stage model of coping for both individual traumas and socially shared upheavals.

Responses to Psychological Upheavals: Interpersonal and Temporal Factors

A psychological upheaval can refer to any unique or potentially distressing event ranging from the trivial (e.g., losing one's keys) to the massive (e.g., rape,

death of a family member). In the case of a minor upheaval, individuals typically experience mild emotions such as frustration or sadness. In addition, recurring thoughts about the event may surface. These thoughts are usually transitory and may focus on the cause or effect of the event or ways to overcome the event (e.g., Lazarus & Folkman, 1984). One of the goals of these thoughts is to attain psychological closure or completion of the event (Martin & Tesser, 1989). An overwhelming trauma provokes far more disruptive emotions and more potent and enduring thoughts about the event. Again, many of these thoughts are oriented toward finding meaning in the event (e.g., Silver, Boon, & Stones, 1983), and ultimately, serve to resolve and thereby overcome the traumatic experience (e.g., Horowitz, 1976).

The more upsetting the upheaval, the more domains of the person's psychological and social world are disrupted. Consider, for example, the massive impact of the unexpected death of one's spouse. Not only does the surviving spouse attempt to understand the death itself, but he or she must come to terms with its impact on his/her self-view, social world, financial and living arrangements, etc. The larger the upheaval, then, the more cognitive work that must be done. The demands of this cognitive work are typically displayed by recurring and unwanted thoughts, sleep disruptions, forgetfulness, and assorted worries.

The more cognitively complex an upheaval (such as when causes are varied or ill-defined, or when outcomes are poorly resolved), the more difficult it is to sort through the many dimensions of the event. A particularly effective way to help organize complex events associated with a trauma is to put them into words by talking with others. Indeed, in the aftermath of an upsetting experience, people typically turn to others to share their deepest thoughts and feelings. Therapists have long argued that talking with others during or following an upheaval is one of the most effective coping mechanisms available (Mahoney, 1991). The social support literature consistently demonstrates that, following a trauma, the more friends upon which a traumatized person can rely, the better the person's prognosis in the months and years following the event (Cohen & Wills, 1985).

Our own research on personal traumas and physical health bolsters these claims. In questionnaire surveys with corporate employees (Pennebaker & Susman, 1988), college students (Pennebaker, 1992), and individuals whose spouses died suddenly due to suicide or automobile accidents (Pennebaker & O'Heeron, 1984), the more that individuals reported talking about their personal traumas, the better their physical and psychological health in the subsequent months and years (see Pennebaker, 1989, for a review). Indeed, psychotherapy outcome studies indicate that after individual therapy of virtually any form, medical utilization drops significantly (e.g., Mumford, Schlesinger, & Glass, 1983). More recently, Spiegel, Bloom, Kraemer, and Gottheil (1989) found that women with advanced breast cancer who were randomly assigned to group talking ses-

sions lived, on average, a year and a half longer than women assigned to an information-only condition.

The Social Dilemma of Talking About an Upheaval

There is little doubt that talking about an upsetting experience improves both psychological and physical adjustment. Yet if talking about a trauma is so beneficial, why don't people do it more frequently? The problem does not apparently stem from victims' general disinclination to talk. Several studies, for example, report that most trauma victims claim they would like to verbally share their experiences with others. A strong desire to disclose event-related thoughts and feelings predominates among cancer patients (Mitchell & Glickman, 1977), those who have recently faced the death of a relative (Schoenberg et al., 1975), and among broad samples of people reporting on a variety of significant upheavals (e.g., Rime, Mesquita, Philippot, & Boca, 1991). These effects are clear-cut for individuals throughout Europe and the United States (Rime, Philippot, Boca, & Mesquita, 1992), and appear to extend to virtually all cultures (Scherer, Wallbott, & Summerfield, 1986).

What prevents victims from disclosing are a variety of extrinsic, psychosocial obstacles. For instance, in the case of unique events or socially unacceptable traumas (e.g., being arrested, marital infidelity, rape), there are no clear cultural norms in defining when or how to talk about them (see Pennebaker, 1993, for a discussion of these cultural barriers). Similarly, individuals are often loathe to talk about some upheavals because of potential social sanctions or possible embarrassment.

A more striking problem in disclosure arises when victims' attempts to relate their traumas conflict with listeners' efforts to maintain emotional repose. Listeners' defenses against traumatic disclosures are not unwarranted, since hearing about others' distress can be psychologically threatening. In one study, for example, we found that when college students listened to Holocaust survivors talk about their World War II experiences, the students' skin conductance levels increased, as did reported feelings of upset and nervousness (Shortt & Pennebaker, 1992). Strack and Coyne (1983) found that people who talked with a depressed individual for 15 minutes subsequently reported feeling anxious, depressed, and hostile themselves. Real-world studies have demonstrated that adults living with and caring for depressed or chronically ill persons suffer from both psychological distress (Coyne et al., 1987) and compromised immune function (Kiecolt-Glaser et al., 1987). From the listener's perspective, then, hearing about another person's upheaval can be emotionally upsetting and physically taxing. A natural way that listeners cope with this dilemma is to downplay the trauma sufferers' pain or to withdraw from the interaction altogether. Darrin Lehman and his colleagues (e.g., Lehman, Ellard, & Wortman, 1986) found that

62% of individuals who had lost either a spouse or a child in a motor vehicle accident reported unhelpful responses from friends or acquaintances. Even higher rates of unhelpful responses were reported by people suffering from multiple sclerosis (Lehman & Hemphill, 1990). Many of the unhelpful remarks reported by Lehman's subjects served to discourage open discussion or emotional expression by the bereaved or ill respondents. Social interactions were effectively constrained by the listeners (see also Coyne, Wortman, & Lehman, 1988).

The social dilemma posed by a trauma is largely unavoidable. Although traumatized individuals typically need and desire to talk about their upheaval, those in their social networks are generally much less motivated to hear about the trauma. Victims are acutely aware of would-be listeners' apprehensions (Silver, Wortman, & Crofton, 1990), and respond to the subtle signs of others' disinterest by curtailing their own traumatic disclosures (Coates et al. 1979).

Temporal Dynamics of Coping with Traumas

Although a traumatic event may unfold quickly—as in the case of an earthquake or the sudden death of a friend—its impact may persist for days, months, or years. Similarly, coping strategies that may be quite effective in the hours or days after the event, such as denial or distancing, may be maladaptive in the long run.

Surprisingly few researchers have focused on the ways that people change in their coping with an event over time. Kubler-Ross (1969) was one of the first clinicians to suggest that people progress through distinct coping stages on learning of their impending death. Although her model fared poorly under closer scrutiny, it prompted interest in the time line of coping. Horowitz (e.g., 1976) has developed a better supported model, featuring distinct stages of *distress*, *working through*, and *assimilation*. Horowitz's working-through stage is of particular interest to the present research, because it identifies talking as crucial to the transition from distress to recovery.[1]

Stages of Collective Coping

Does communitywide coping follow a stage-like process? When, for example, does a traumatized population switch from one mode of coping to another?

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[1] Despite the intuitive appeal of stage models, the empirical evidence to support them is scanty. In summarizing the results of several large-scale interview and questionnaire studies, Wortman and Silver (1989) concluded that only about 50% of people who have faced a massive trauma evidence high levels of psychological distress in the weeks following the trauma. Of these, over half return to normal functioning within a year. At best, according to Wortman and Silver, only 30% of people evidence possible signs of progressing through clear-cut stages in coping.

Current stage theories do not address this issue. For example, Horowitz's three-stage model applies mainly to recovery from personal trauma, where distressed individuals can seek disclosure opportunities from a presumedly less-disturbed support network. This favorable ratio of emotionally available supporters to distressed victims does not characterize widespread disasters, where entire populations are affected, and may be entering Horowitz's working-through phase simultaneously. If, as we have discussed earlier, listening to traumatic dis-closures is distressing to nonvictims, how might the disclosure attempts of others affect those attempting to cope with their own posttraumatic distress?

The rather extensive psychological literature on disasters is also surprisingly silent on the temporal dimension of collective coping, and supplies few relevant clues. In a survey of 73 studies of natural and man-made disasters spanning 1959 through 1989, we found that very few investigations employ the methods needed to detect temporally mediated effects. Of the studies we surveyed, 70% collected data from subjects only once and an additional 16% sampled subjects only twice. Even more problematic is that for 75% of these published studies, participants were not interviewed until at least six weeks after the disaster's occurrence (Harber & Pennebaker, 1991). This is far too long a lapse. Our earthquake and war studies (which we soon discuss) show that many potent effects arise—and dissipate—by a disaster's sixth week. In short, the overwhelming majority of disaster studies would not be able to adequately tap stages even if they did exist.

One of the few explorations of collective coping over time was conducted by Hobfoll and London (1986), who studied coping among Israeli civilians during the Israeli–Lebanese War of 1983. The researchers found that, initially, mutual disclosures were welcomed in this population. However, over time the incessant exposure to other people's distress proved a stressor in itself, depriving copers of needed reprieve from the sources of their disquiet. Hobfoll and London coined the term "pressure-cooker effect" to characterize copers' experience of unceasing exposure to others' negative disclosures.

As Hobfoll and London's research indicates, upheavals do not occur in social vacuums. Instead, disasters arise amid shifting social norms and chal-lenged community resources. Unfortunately, disaster research has generally overlooked the evolving nature of victims' social environments in the weeks following disaster. Consequently, little is known about the adequacy of support in a community of victims, nor about the inter- and intrapersonal outcomes that arise-when large populations have their coping needs unmet.

Talking and Thinking About an Event as Indicators of Stages

The degree to which people ruminate or think about an event is a rough measure of the degree to which they are emotionally and cognitively tied to the

event. Level of rumination is highly correlated with measures of anxiety, depres-sion, and sleep disturbance (e.g., Nolen-Hoeksema, 1990). In contrast to the treadmill of rumination, talking about an event can tend to genuine resolution of posttraumatic distress. It does so through both the cognitive act of putting the experience into words (which affords insight, or perspective) and through the social act of communicating with another person (which opens channels for a host of affiliative benefits; see Harber & Pennebaker, 1992, for a discus-sion).

From a psychological perspective, thinking about an upheaval is not in and of itself unhealthy if the person can also talk about the event. However, as we have discussed earlier, posttraumatic thoughts become problematic when they are chronically suppressed. For this reason, the relative difference between thinking and talking about a past event should serve as an indirect measure of individuals' ongoing social and psychological coping. We therefore propose that victims are at risk—physically and psychologically—when their posttraumatic thoughts oc-cur with much greater frequency than their posttraumatic disclosures.

In an ideal social world, individuals would be able to talk freely about the events that occupy their thoughts. If social constraints are erected such that people feel inhibited about talking about a meaningful personal upheaval, the disparity between talking and thinking should increase. That is, people will think about the crisis much more than they will talk about it. During this period of social inhibition, we should see increased health problems, signs of interpersonal conflict, and higher rates of depression, anxiety, and sleep problems. As rates of both talking and thinking about the event approach zero, these psychological and health difficulties should abate. These assumptions serve as the basis of our social stage model.

Derivation of the Social Stage Model: The Loma Prieta Earthquake

Our stage model of collective coping is empirically, rather than theoretically, derived. We first noticed it in the aftermath of a large earthquake. In October, 1989, the Loma Prieta Earthquake shook the San Francisco Bay Area killing over 60 people and causing tremendous destruction. The earthquake, which measured 7.2 on the Richter scale, was the largest in the area since the great 1906 San Francisco Earthquake. Within a week of its occurrence, we began a large-scale study to try to capture whatever psychological and social changes might exist following such a massive event.

The primary sample included 789 residents of San Francisco, Sacramento, and Claremont, California, and Dallas, Texas, who were interviewed by phone on one occasion 1, 2, 3, 6, 8, 16, 28, or 50 weeks after the quake. The 10-minute phone interviews, made in each of the surveyed cities, were conducted between 6:00 and 9:00 P.M. local time, during week nights. We employed a random digit

FREQUENCY OF QUAKE-RELATED THOUGHTS AND TALKING

Fig. 1. Rates of event-related thoughts and talking following the Loma Prieta Earthquake.

dialing (RDD) technique to locate our respondents. Because of the similarities among responses of people in the control cities (Sacramento, Claremont, and Dallas), their data were collapsed into a single comparison group. This "non-Bay Area" sample, then, served as control population for measuring postquake coping among our San Francisco respondents. In each interview, subjects were asked how many times they had talked about and had thought about the earthquake in the previous 24 hours. Overall, Bay Area residents talked and thought about the quake at very high levels during the first one to three weeks after the quake. Indeed, we heard many spontaneous comments in our interviews of people noting how the quake had brought the city together.

As can be seen in Fig. 1, beginning about two weeks after the earthquake and lasting until our six-week measure, a significant social and psychological shift appeared. During this time, respondents greatly reduced their talking about the earthquake relative to their thinking about it. Interestingly, it was during this same period that self-reported illness episodes, quake-related dreams, and arguments with family members and co-workers increased. Particularly striking was that aggravated assault rates in San Francisco increased over 10% from the previous year during the same time period. All of these self-report and behavioral effects completely disappeared by the six-week mark (Harber & Pennebaker, 1991; Pennebaker, 1992).

We were somewhat baffled why, two weeks after the earthquake, people stopped talking about a socially shared event that appeared to so thoroughly preoccupy them. An intriguing explanation was supplied by responses to two other survey items: (1) how much did respondents want to hear other people
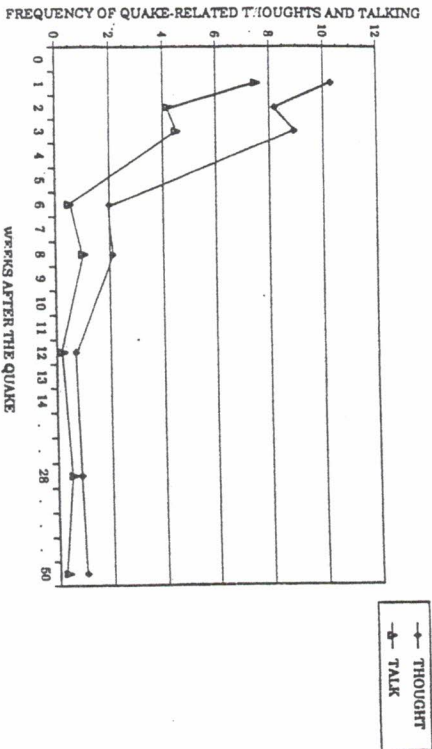
talk about the earthquake, and (2) how much did they, themselves, wish to talk about the disaster. Beginning two to three weeks after the quake, a significant shift occurred, indicating that subjects wanted to talk about the quake but did not want to be audience to other people's quake-related thoughts and feelings. This sentiment was succinctly expressed by T-shirts, appearing in Palo Alto four weeks after the quake occurred, which read "Thank you for not sharing your earthquake experience."

A fascinating evolution in social constraint was emerging. Collectively, Bay Area residents may have been discouraging quake-related discussions. Whereas the majority of people expressed an interest in talking about their own experiences, they may have also been erecting barriers to prohibit others from bringing up the topic. A subtle conspiracy of silence was the result.

Cumulatively, our earthquake findings suggest that coping with an upheaval follows three distinct social phases or stages (see Fig. 2). In the *emergency phase*, which lasted about two weeks after the earthquake struck, individuals report obsessive thoughts about the upheaval. At the same time, social contacts increase and people are able to openly express their anxieties, thoughts, and feelings to others. During this time, negligible changes in health problems, nightmares, or social conflicts occur. The *inhibition phase*, which persisted from about two weeks to six weeks after the earthquake, is characterized by significant drops in talking about the upheaval but continued thoughts about it. It is during this time that social conflict, disturbing dreams, and health problems surface.
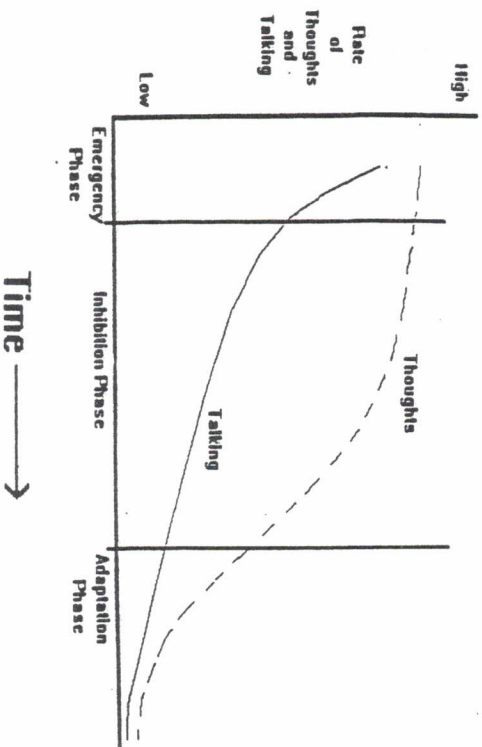

Fig. 2. The three-stage model of collective coping.

The *adaptation phase*, which remained fairly constant after about six weeks following the quake, signaled that the upheaval was psychologically over for most people. By this point, virtually all of our social and health indicators in the Bay Area were indistinguishable from those in our control cities.

It should be noted that Fig. 2 is a rough theoretical curve, highlighting the disparity between thinking and talking and the inhibition phase of collective coping. We believe that the slope of the talking and thinking curves depends on the magnitude and quality of the trauma, such that in more acute disasters the disparity will be of greater degree and duration. For a highly embarrassing or threatening trauma, the talking and thinking curves would approach zero at an accelerated pace. We therefore contend that the three phases of coping—emergency, inhibition, and adaptation—are based on the relative disparity between thinking and talking rates. The Persian Gulf War presented a unique opportunity for us to directly test this collective coping model.

The Persian Gulf War: A Test of the Social Stage Model

Given just the surface features of the Gulf War, one would not expect this event to shake the national psyche. This was an action taking place on the other side of the world, with little chance of endangering most U.S. residents. It was of short duration, exacted few Allied casualties, and ended in a resounding military victory. However, a deeper analysis of the conflict reveals a more psychologically disruptive episode.

For perhaps the first time in a generation, the U.S. was engaged in a truly massive military venture wherein half a million American men and women were directly exposed to the perils of warfare. Projected Allied fatalities ranged up to the thousands in a war that some experts believed could last many months. There were fears of poison gas attacks, and perhaps even nuclear strikes, as well as civilian worries of terrorist attacks at home. Television and newspapers inundated the U.S. public with war reporting, supplying a steady stream of images, statistics, and anecdotes detailing the conflict from its early development to its conclusion. Finally, although the war was generally a source of national unity (with only 10–15% strongly opposing U.S. involvement), the conflict's aftermath did not supply a simple, comfortable resolution. Despite all the drama, gallantry, battlefield triumph, and national resolve, the war eroded into troubling ambiguities and a deflating restoration of the status quo.

In sum, then, the Persian Gulf war generated much apprehension, evoked powerful national memories, and galvanized the public's attention as could only a major crisis. And this attention, once aroused, found itself challenged by significant moral ambiguities that cast a dispiriting pall over what had been such a unifying effort. For these reasons, the war had the ingredients of a significant national upheaval.

Drawing upon our experience with the earthquake project, we initiated a large-scale study to examine the social and psychological effects of the war on a relatively typical American city—Dallas, Texas. By adapting many of our earthquake measures, we were able to tap people's cognitive, social, and emotional responses to the war on a week-by-week basis. We were particularly interested in learning if the social stages of coping that we had observed with the earthquake generalized to the civilian population during and after the war.

Methods

Three types of samples were employed within the Dallas area. The primary sample came from RDD telephone interviews from 361 adult Dallas residents contacted on one occasion during each week of the war and in the six weeks after the war's conclusion. In all, there were 12 sampling periods and approximately 30 different respondents each week. Telephone calls were made on Thursday evenings between 6:00 and 9:00 P.M. Across the twelve weeks, refusal rates averaged 54%, ranging from 42% on the night after the war's beginning to 68% during our last two sampling weeks. During the war itself, refusal rates were the highest two weeks (57%) and three weeks (52%) after the war started. Fifty-two percent of the respondents were female. The mean age of survey participants was 39.1 years.

A second survey sample was comprised of responses to a brief questionnaire that we ran in the Dallas *Times-Herald* (daily circulation about 240,000). The questionnaire, which we developed, appeared weekly during the war, and then once three weeks after the war's end. Respondents were instructed to mail or FAX their questionnaires to the first author at Southern Methodist University. During the war, we collected approximately 250 responses each week. The single postwar survey yielded only 146 responses. Overall, 1710 newspaper questionnaires were returned (76% mail, 24% FAX). The *Times-Herald* sample averaged 44.1 years of age and was 56.1% male. Note that a newspaper sample such as this does not purport to randomly survey a group of people; rather, it taps the views of people who actively want to disclose their thoughts and feelings.

A third sample employed approximately 200 students enrolled in one of five lower level psychology classes. Students completed questionnaires similar to those used in the RDD sample once each week during the war and for six weeks after the war (excluding one sampling period during spring break after the war). Unfortunately, due to absenteeism, fairly complete data sets were available for only 117 students. The final sample was 63% female with a mean age of 20.4. The college student sample was of interest because it permitted a repeated measures analysis of war-related reactions.

On all questionnaires for all samples, subjects estimated the number of times that they had talked about and had thought about the "Middle East situation" within the last 24 hours. The survey also gathered self-reports on how much
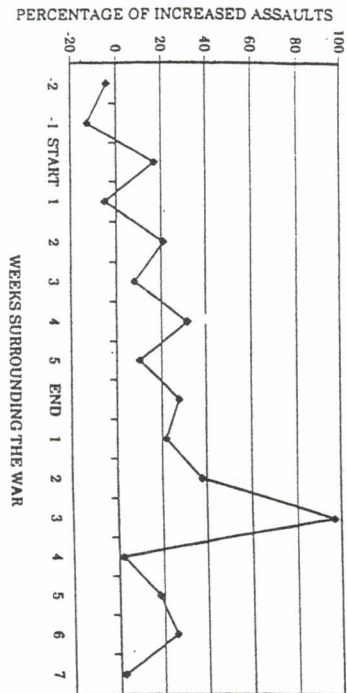
almost 50% in the next six weeks and dropped back to 42% four weeks after the war ended. In fact, the highest rates of arguments occurred in the three weeks immediately after the war's conclusion (56% the day after the war's ending, 57% one week later, and 50% two weeks later). In cooperation with the Dallas Police Department, we were able to get aggravated assault rates from Dallas County on a day-by-day basis from January 3 (two weeks before the war) to April 18 (seven weeks after the war's ending) for 1991 and the preceding year. As a reference point, the police respond to approximately 270 aggravated assault calls per week.

As can be seen in Fig. 5, assault rates consistently increased from the previous year beginning two weeks after the war's beginning. Particularly striking was the massive increase in assaults in the two to three weeks after the war's conclusion. Note that this postwar time frame corresponds with weeks 9 and 10 in Fig. 2—a period where there was a slight increase in postwar thoughts and a drop in postwar talking. This escalation in assaults is reminiscent of San Francisco's upsurge in urban violence, which we observed in the three to eight weeks following the Loma Prieta Earthquake.

Results from the Newspaper and College Student Samples

On most primary measures, the results from the newspaper and college student samples were similar to those from the RDD telephone sample. In response to the question asking how much subjects favored the U.S. involvement in the war during the six weeks of the war, 73.7% of telephoned subjects supported the war in comparison with 60.1% of the newspaper sample and 66.4% of the college sample. The general trends in talking and thinking were also similar—suggesting the three stages that we found with the RDD sample are stable.

Fig. 5. Rate of increased aggravated assaults, 1991 vs. 1990.

Surprisingly, the absolute rates of talking and thinking about the war for the newspaper sample were somewhat lower than for those of the RDD sample. The college students, however, talked and thought about the war significantly *less* than did those from either of our adult samples. During the first five weeks of the war, RDD subjects reported thinking and talking about the war 11.2 and 7.1 times per day, respectively (for newspaper sample: thinking rate = 8.9, talking rate = 6.4). College students, in contrast, thought and talked about the war during this period only 6.1 and 4.2 times, respectively. In many ways, these findings are perplexing given that college students knew more people who had gone to the Persian Gulf than did either of our other samples. Further, had the war expanded, the students faced the possibility of a draft, and even direct exposure to the fighting. We suspect one explanation for students' moderate reactions is that they were repeatedly interviewed. Their in-class weekly war surveys provided students a regular opportunity to disclose (and thereby resolve) their war-related thoughts and feelings, which may have led to more muted survey responses.

However, we recognize that there are other plausible explanations for students' relative placidity. For example, the older respondents comprising our RDD and newspaper samples may have lived through more crises (e.g., World War II, the Korean War, the Cold War, Vietnam) and therefore might have a more personal and more elaborated sense of the dangers and sorrows accompanying a large-scale conflict. The "worst" that this older sample might have anticipated from the Gulf War, therefore, have been substantially more severe and disturbing than what the younger college sample envisioned. If so, then the war would have probably existed as a more stressful event for the older RDD and "newspaper" respondents, causing them to show more disturbance over time.

Implications and Future Directions

This article has focused on the social and psychological responses to traumatic events using the Persian Gulf War as a test case. We have argued that talking about psychological upheavals—whether individually or collectively experienced—is associated with improved psychological and physical health. When individuals fail to talk about an important event but continue to ruminate about it, problems ensue. Interestingly, the conditions shaping the social sharing of an event appear to follow a different time course than those that determine rates of event-related ruminations. Indeed, the divergent patterns of talking and thinking about events reveal a stage-like process in postdisaster coping.

Unfortunately, our argument has been largely circumstantial. We cannot say with certainty that dreams, anxiety, or aggravated assaults are the direct result of people's undisclosed ruminations about an upheaval. The cross-sectional data that we have collected merely suggests that these effects tend to co-occur. How-

individuals personally favored the involvement of the U.S. in the Middle East situation. Ratings of subjects' negative moods, dreams, and health problems were also collected.

Primary Results from the RDD Survey

Across all measures, the general views of Dallas residents toward the war were virtually identical to those reported from national surveys that were periodically conducted by the *New York Times* and other news and polling agencies. Overall, 74.2% of our respondents favored U.S. involvement, 11.3% were opposed, and the remaining 13.5% were undecided. Favorability ratings were highest the day after the war's completion and lowest two weeks after the war's beginning on the third measurement period. As with the national surveys, men in our study favored the war slightly more than did women, and younger people supported it more than did older people (all effects are statistically significant using analyses of variance at $p \le .05$ unless stated otherwise). Overall, the attitudes of Dallas residents mirrored those of the nation.

In studying Fig. 3, a number of interesting patterns emerged concerning the degree to which people thought and talked about the war. In comparing Fig. 3 with that of Fig. 1 dealing with San Franciscans' earthquake responses, it is clear that the war profoundly affected people's thoughts and social behaviors. One week after the war, for example, Dallas residents thought and talked about the war on average 12 times per day. In contrast, one week after the quake, Bay Area
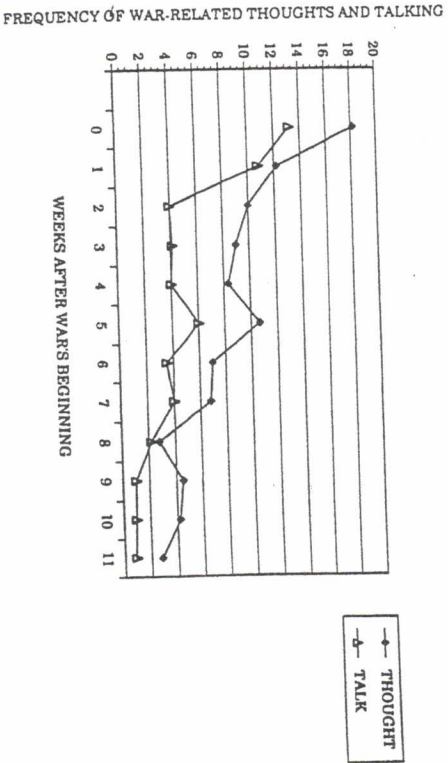
FREQUENCY OF WAR-RELATED THOUGHTS AND TALKING

Fig. 3. Rates of event-related thoughts and talking following the Persian Gulf War.

citizens thought and talked about the earthquake only about 9 times per day. In fact, the overall rate of thinking and talking about the war remained remarkably high throughout the entire survey.

In line with the stage model hypothesis, the RDD responses suggest a significant change in the talking and thinking patterns beginning approximately two weeks after the war's outbreak. Beginning at the two-week point and lasting approximately five weeks, subjects reported a significant drop in talking about the war. However, during this same period their reported rate of war-related thinking remained relatively constant. By six weeks after the war's beginning (and about two weeks after its conclusion), the degree of talking and thinking about the war stabilized at relatively low levels. In addition to the talking and thinking patterns, self-reports of anxiety increased between weeks 3 and 8 corresponding with the inhibition phase.

Of particular interest were the responses to our question asking subjects if they had dreams about the Middle East situation in the last week. Recall that in the earthquake study, there had been a significant increase in dreams about the quake in the two to six weeks following the earthquake's occurrence. As can be seen in Fig. 4, an almost identical pattern emerged concerning war-related dreams among our Dallas sample. During the two to four weeks after the war's beginning, when people had greatly reduced their talking about the war, their dreams about it almost doubled.

Finally, the rates at which people reported having one or more arguments with others yielded interesting trends. During the first two weeks of the war, approximately 40% of respondents reported arguments. This rate increased to
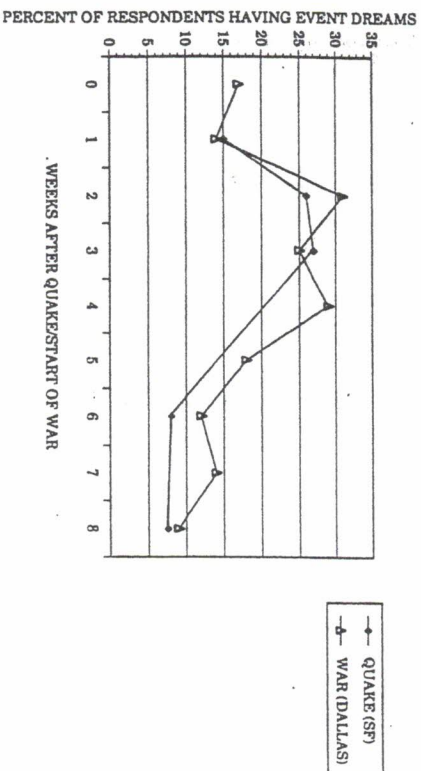
PERCENT OF RESPONDENTS HAVING EVENT DREAMS

Fig. 4. Rates of event-related dreaming following the quake and the war.

ever, even if the precise mechanisms cannot be teased apart at this point, our studies raise important questions about the existence of a stage model of coping, implications about interventions, and the comparability of wars, natural disasters, and even individual traumas. They also point to methodological considerations for future large-scale studies.

Social Stage Models and Coping Over Time

It is a mistake solely to view coping as a stable personality style that remains constant in the days and weeks following an upheaval. Psychological coping strategies can be intensely interpersonal. Any general theory of responses to trauma must consider the dynamic social interactions that take place in the trauma's wake. In particular, the degree to which people can talk about a trauma depends upon them having willing and able listeners. If the social milieu constrains discussions about an event, then the degree to which individuals are able to organize and assimilate the event will be reduced.

In both the earthquake and war studies, the levels at which people talked about the events dropped dramatically about two weeks into the upheaval. We are unable to say why this occurred. There was some evidence in the earthquake study that people simply got tired of hearing about it. In the war study, people were not directly involved in the fighting and so there may have been a finite number of issues to talk about. Whatever drove the social dynamics, however, people continued thinking about the events for several weeks.

The talking and thinking data served as the basis of our positing a social stage model. In the first two weeks, which we have called the emergency phase, Americans were immersed in the war. In our own experiences, we were struck by the degree of openness of people in our community. Complete strangers would strike up conversations about the war at the grocery store or filling station. We had rarely seen such patterns of interaction before or since. During that brief window of time, the social norms had changed.

By the third week of the war, social patterns appeared to have returned to normal. People in the check-out lines in the grocery store now stood silently, returning to the norms of polite solitude that preceded the war's advent and execution. We have referred to the three to six weeks after the war's beginning as the inhibition phase because people were not talking much about the war, even though they were continuing to think about it. Were people truly inhibiting their talking during this period, or did they genuinely prefer to carry on their ruminations in solitude? We simply do not know. Future research must focus on the underlying reasons for the reductions in talking during this phase. Although we are unclear about the driving mechanism, it is important that negative moods, arguments, dreams, and other adverse reactions surfaced at this time. These reactions typically signal posttraumatic adjustment, and belie the quietude that the reduced rates of disclosure suggest.

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Finally, by eight to twelve weeks after the earthquake and the war, people's thoughts and social interactions concerning the respective upheavals returned to normal. In the case of the war, we were somewhat surprised that there wasn't a greater resurgence of talking and thinking once it was over. Perhaps the horrors of the Kurdish situation and the reestablishment of the Kuwaiti regime may have caused people to focus their attentions on more tractable issues and events.

The stage model that we have proposed is more descriptive than explanatory. As noted earlier, the duration of each coping phase, and their associated side effects, should largely depend on the magnitude and quality of the trauma. Highly threatening and prolonged traumas, such as the Cuban Missile Crisis, may have an extended emergency phase. Socially unacceptable upheavals, such as the John Kennedy and Martin Luther King assassinations, could have particularly lengthy and debilitating inhibition phases (see Pennebaker, 1990). Further, individuals or groups of people could quickly break out of this process should a new trauma or event occur.

Implications for Interventions

In most cases of community crisis, mental health workers are trained to address immediate trauma.:: reactions. If a natural or man-made disaster shakes a community, for example, psychologists, psychiatrists, and social workers typically work quickly to help individuals cope with the massive disruptions in their lives. However, within a few days or perhaps weeks, the mental health community returns to its normal functioning. An implication of our research is that interventions should continue throughout the inhibition phase, which may not surface for two to three weeks after the disaster. Ironically, this is precisely the time that most residents (and even mental health workers themselves) no longer want to deal with the event. Yet just when a trauma becomes old news is when a second wave of adverse affects begins to crest.

Another relevant implication of our findings is that people naturally alter their social networks immediately after an upheaval. Traditional social norms against talking with acquaintances and strangers dissolve. Indeed, natural social support processes emerge in such a way as to help most of those who are in distress. This is not to say that people do not need professional counseling in the days after the onset of a trauma. Rather, most people appear to cope well during this period compared with the onset of problems two weeks later.

To What Degree Are Wars, Natural Disasters, and Personal Traumas Similar?

Despite the tremendous differences between the Persian Gulf War and the Loma Prieta Earthquake, the social reactions to these events are compellingly similar. Rates of thinking and talking, as well as indices of distress (e.g., dreaming, argumentation) of these two events map closely on to one another.

What this suggests is that underlying the distinctive surface features of major events are some common psychosocial challenges. In both the quake and the war, large groups of people were focused on the same event and were concerned about the same things. Additionally, everyone within these large-scale upheavals served as both a potential talker and a potential listener. We have no reason to believe that other collective upheavals, such as chemical spills, assassinations, or floods, would result in strikingly different temporal effects along these social-psychological dimensions, and we would therefore expect similar patterns of talking and thinking over time.

An unanswered question concerns the degree to which our social stage model also applies to isolated personal upheavals, such as death of a family member or divorce. Anecdotal evidence hints that similar processes may be at work. For example, in interviews with approximately 40 parents who faced the death of a child, the majority noted that friends and loved ones were extremely supportive during the first two to three weeks following their child's death. After that time, they noted that many people began to avoid them—not knowing what to say. Several parents spontaneously reported that they got the feeling that their friends expected them to get on with life (Pennebaker, 1993). Future research should explore changes in social dynamics as a function of type of trauma. The degree to which social stages may emerge has important implications for therapy.

Methodological Considerations in Studying Upheavals Over Time

The war project collected data from three very different types of samples. Each sampling strategy had clear advantages and drawbacks. Reliance on a RDD telephone survey methodology provides the best information on how people, in general, are coping with a trauma. One of its major weaknesses, other than the considerable time and resources needed to gather the data, is that a sizable percentage of people refuse to respond to telephone surveys. In our studies, refusals could have reflected a general annoyance with phone solicitors or, more threatening to the research, the adoption of denial strategies of coping. Rather than deal with the psychological meaning of the earthquake or war, individuals may have avoided our surveys in order to maintain their psychic equilibrium. If so, then the very phenomenon we tried to capture was screening us from the people it most strongly affected.

Repeated sampling of the same subjects, as in the case of our college student subjects, allows for more powerful statistical tests and a clearer sense of the evolution of social and psychological processes within the individual. The most basic disadvantage is that repeated responding to questioning undoubtedly affects the ways individuals think about and organize the event. Our college student sample, for example, reported talking and thinking about the war at

surprisingly low rates. Perhaps by addressing the issue in a clear-cut way week after week, the students simply had less need to talk about it.

Surveys conducted in the public media, such as our newspaper technique, have raised the eyebrows of researchers ever since the famous *Literary Digest* poll of 1932 that predicted an overwhelming reelection of Herbert Hoover over Franklin Roosevelt. In many ways, however, we found our newspaper sample exceedingly interesting. Respondents were strongly motivated to voice their opinions—not unlike voters or those who send letters to their congressional representatives. Although not a random sample, the results from the newspaper poll were remarkably similar to our RDD phone survey results. Another payoff from this technique was the enthusiastic response we received. In almost 8% of the surveys, people included letters expressing their views. Some were brutally hostile, accusing us of being both right-wing warmongers and left-wing bleeding hearts. Others, however, were remarkably insightful analysts of their own and other's feelings about the war. As has been suggested by Shaver and Rubenstein (1983), a newspaper sample provides a wealth of hypotheses and perspectives often overlooked by the theory-guided researcher.

Finally, we recommend that the timing of disaster research correspond to the character of disasters themselves. In both our earthquake and war studies, we found that some of the most dramatic reactions *appeared and subsided* within days of these events' occurrence. This response volatility suggests that measures of postdisaster coping must be rapidly deployed. Thus, human subjects committees and research funders should have review policies that accommodate event-related research. Second, communitywide reactions to major events are dynamic and unfold rapidly over time. This means that single sampling investigations are inappropriate, and must be supplanted by the time-lapse renderings that only repeated samplings can supply. Last, the social pressures produced by collective coping appear to present psychological challenges in themselves. Measures need to be sensitive to the secondary strains that occur when most members of a community are simultaneously seeking support and are being sought after as support sources. For these reasons, we believe that disaster studies will be greatly enhanced by marshaling basic research resources, strategies, and measures in anticipation of future upheavals.

References

Coates, D., Wortman, C. B., & Abbey, A. (1979). Reactions to victims. In I. H. Frieze, D. Bar-Tal, & J. S. Carroll (Eds.), *New approaches to social problems* (pp. 25–52). San Francisco: Jossey-Bass.

Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98,* 310–357.

Coyne, J. C., Kessler, R. C., Tal, M., Turnbull, J., Wortman, C. B., & Greden, J. F. (1987). Living with a depressed person. *Journal of Consulting and Clinical Psychology, 55,* 347–352.

Coyne, J. C., Wortman, C. B., & Lehman, D. R. (1988). The other side of support: Emotional

overinvolvement and miscarried helping. In B. H. Gottlieb (Ed.), *Social support: Formats, processes, and effects* (pp. 305–390). Newbury Park, CA: Sage.

Harber, K. D., & Pennebaker, J. W. (1991). *The social impact of the Loma Prieta earthquake.* Paper presented at the American Psychological Association meeting, San Francisco, CA.

Harber, K. D., & Pennebaker, J. W. (1992). Overcoming traumatic memories. In S. A. Christianson (Ed.), *The handbook of emotion and memory* (pp. 359–387). Hillsdale, NJ: Erlbaum.

Hobfoll, S. E., & London, P. (1986). The relationship of self-concept and social support to emotional distress among women during war. *Journal of Social and Clinical Psychology*, 4, 189–203.

Horowitz, M. J. (1976). *Stress response syndromes.* New York: Jason Aronson.

Kiecolt-Glaser, J. K., Glaser, R., Shuttleworth, E. C., Dyer, C. S., Ogrocki, P., & Speicher, C. E. (1987). Chronic stress and immunity in family caregivers of Alzheimer's disease victims. *Psychosomatic Medicine*, 49, 523–535.

Kubler-Ross, E. (1969). *On death and dying.* New York: Macmillan.

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping.* New York: Springer.

Lehman, D. R., Ellard, J. H., & Wortman, C. B. (1986). Social support for the bereaved: Recipients' and providers' perspectives on what is helpful. *Journal of Consulting and Clinical Psychology*, 54, 438–446.

Lehman, D. R., & Hemphill, K. J. (1990). Recipients' perceptions of support attempts and attributions for support attempts that fail. *Journal of Social and Personal Relationships*, 7, 563–574.

Mahoney, M. J. (1991). *Human change processes: The scientific foundations of psychotherapy.* New York: Basic Books.

Martin, L. L., & Tesser, A. (1989). Toward a motivational and structural theory of ruminative thought. In J. S. Uleman & J. A. Bargh (Eds.), *Unintended thought* (pp. 306–326). New York: Guilford.

Mitchell, G. W., & Glickman, A. S. (1977). Cancer patients: Knowledge and attitude. *Cancer*, 40, 61–66.

Mumford, E., Schlesinger, H. J., & Glass, G. V. (1981). Reducing medical costs through mental health treatment: Research problems and recommendations. In A. Broskowski, E. Marks, & S. K. Budman (Eds.), *Linking health and mental health* (pp. 257–273). Beverly Hills, CA: Sage.

Nolen-Hoeksema, S. (1990). *Sex differences in depression.* Stanford, CA: Stanford University Press.

Pennebaker, J. W. (1989). Confession, inhibition, and disease. In L. Berkowitz (Ed.), *Advances in experimental social psychology:* (Vol. 22, 211–245). New York: Academic Press.

Pennebaker, J. W. (1990). *Opening up: The healing powers of confiding in others.* New York: William Morrow.

Pennebaker, J. W. (1992). Inhibition as the linchpin of health. In H. S. Friedman (Ed.), *Hostility, coping, and health* (pp. 127–139). Washington, DC: American Psychological Association.

Pennebaker, J. W. (1993). Mechanisms of social constraint. In D. Wegner & J. W. Pennebaker (Eds.), *Handbook of mental control* (pp. 200–212). Englewood Cliffs, NJ: Prentice-Hall.

Pennebaker, J. W., & O'Heeron, R. C. (1984). Confiding in others and illness rate among spouses of suicide and accidental death victims. *Journal of Abnormal Psychology*, 93, 473–476.

Pennebaker, J. W., & Susman, J. R. (1988). Disclosure of traumas and psychosomatic processes. *Social Science and Medicine*, 26, 327–332.

Rime, B., Mesquita, B., Philippot, P., & Boca, S. (1991). Beyond the emotional event: Six studies on the social sharing of emotion. *Cognition and Emotion*, 5, 435–465.

Rime, B., Philippot, P., Boca, S., & Mesquita, B. (1992). Long-lasting cognitive and social consequences of emotion: Social sharing and rumination. In W. Stroebe & M. Hewstone (Eds.), *European review of social psychology* (Vol. 3, pp. 225–258) New York: Wiley.

Scherer, K. R., Wallbott, H. G., & Summerfield, A. B. (Eds.). (1986). *Experiencing emotion: A cross-cultural study* (Cambridge: Cambridge University Press.

Schoenberg, B. B., Carr, A. C., Peretz, D., Kuscher, A. H., & Cherico, D. J. (1975). Advice of the bereaved for the bereaved. In B. Schoenberg, I. Gerber, A. Wiener, A. Kuscher, D. Peretz, & A. Carr (Eds.), *Bereavement: Its psychosocial aspects* (pp. 362–367) New York: Columbia University Press.

Shaver, P., & Rubenstein, C. (1983). Research potential of newspaper and magazine surveys. In

H. T. Reis (Ed.), *Naturalistic approaches to studying social interaction* (pp. 75–91). San Francisco: Jossey-Bass.

Short, J. W., & Pennebaker, J. W. (1992). Talking versus hearing about Holocaust experiences. *Basic and Applied Social Psychology*, 13, 165–179.

Silver, R. L., Boon, C., & Stones, M. H. (1983). Searching for meaning in misfortune: Making sense of incest. *Journal of Social Issues*, 39(2) 81–102.

Silver, R. C., Wortman, C. B., & Crofton, C. V. (1990). The role of coping in support provision: The self-presentation dilemma of victims of life crises. In B. R. Sarason, I. G. Sarason & G. R. Pierce (Eds.), *Social support: An interactional view* (pp. 397–426). New York: Wiley.

Spiegel, D., Bloom, J. H., Kraemer, H. C., & Gottheil, E. (1989). Effects of psychosocial treatment of patients with metastatic breast cancer. *Lancet*, 2, 888–891.

Strack, S., & Coyne, J. C. (1983). Social confirmation of dysphoria: Shared and private reactions to depression. *Journal of Personality and Social Psychology*, 44, 798–806.

Wortman, C. B., & Silver, R. C. (1989). The myths of coping with loss. *Journal of Consulting and Clinical Psychology*, 57, 349–357.

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