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Local Crime as a Natural Hazard: Implications for Understanding the Relationship Between Disorder and Fear of Crime[1]

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Local crime rates are similar in several respects to natural hazards. The points of similarity include objective and subjective features and responses to both. These comparable characteristics may help explain a continuing conundrum in the responses to disorder literature: the loose coupling between crime and fear levels at the local level. The proposed analogy may also be relevant to the relationship between local crime and behavioral responses to disorder. The points of analogy between crime and natural hazards lead to theoretical expectations supported by results from recent studies on responses to disorder. The perspective developed here helps explain why instrumental responses to crime elevate fear over time. We discuss the policy implications of the analogy, and suggest future areas of research and theoretical development.

The level of disorder in a locale is reflected in several ways: the local crime rate, police activity levels, victimization experiences of residents while in the neighborhood, and social and physical cues to the erosion of public order

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such as widespread illegal activity in public and extensive dilapidation and defacement of buildings. Residents' responses to disorder are likewise multifaceted. Behavioral responses include protection of self or property, avoidance of dangerous areas, or joining collective anticrime efforts. The most widely examined psychological response is fear of crime.

For over 20 years researchers have examined these individual and collective responses to disorder (see DuBow, McCabe, & Kaplan, 1979, or Rosenbaum, 1988b, for reviews). They have sought to establish connections between indices of disorder, and responses to disorder. (Throughout we use the term "responses to disorder" for the sake of convenience. Our usage implies no specific view about the ongoing debate on the construct validity of this term.) In general, investigations have revealed a range of factors *other* than local crime rates or victimization experiences which influence behaviors and psychological responses to disorder. But studies of the relationship between local crime rates and level of responses to disorder have revealed puzzling findings. Two recurring patterns are that (a) fear levels and local crime rates are very loosely coupled, and (b) collective responses to local crime problems are not most widespread in high crime communities. Researchers have proposed several explanations for these findings but these interpretations rely on explanatory factors external to the two key constructs: local crime and responses to disorder.

The links between actual or reported levels of disorder and the responses thereto remain key issues. They influence a range of processes in the urban residential environment: levels of psychological distress, mobility levels, and citizen–police coproduction of public safety, to name just a few. Thus, for theoretical and practical reasons it is still important to try and unravel the connections between local crime and responses to disorder.

The present paper reexamines the enigmatic connection between local crime and fear using a perspective different than those applied previously. Our reassessment starts with the following proposal: There are similarities between local crime and natural hazards, such as floods or droughts. The points of similarity include both ecological patterning and perceptual dynamics. Consequently, responses to disorder may be similar to responses to natural (and some human-made) hazards. This proposal provides a different interpretation of work to date linking disorder and responses to disorder.

We are not the first to suggest points of similarity between crime and hazards. The integration we develop extends Norris' (in press) focus on the population of violent events which can elicit traumatic stress responses. Violent events are marked by extreme or sudden force, are perpetrated by an external agent, and elicit strong negative psychological responses; they include serious crimes as well as natural and technological disasters. She pointed out that such events are "undesirable, unexpected, and uncontrollable . . .

relatively rare . . . [and of] low frequency" (p. 5). We significantly elaborate and extend these ideas by detailing points of similarity and dissimilarity between crime and hazards, pinpointing similar underlying processes which may be at work, and applying these insights to existing puzzles in the responses to disorder literature. The bulk of our analysis focuses on the connection between local crime rates and fear of crime levels. Space limitations preclude a detailed application of our analogy to the second problem of understanding the local crime–anticrime behavior links; we offer only some preliminary suggestions of how the points of analogy may apply to the latter issue.

We begin by elaborating on the similarities between natural hazards and local crime. We also touch on points of dissimilarity. We then provide more detail on the aforementioned puzzling relationship between local crime and the most researched perceptual response to disorder, fear of crime. We develop an alternative explanatory heuristic based on natural hazard-crime parallels. We offer a few preliminary suggestions indicating how the explanatory heuristic might apply to the relationship between local crime rates and anticrime behaviors. We close with a discussion of policy implications and research futures.

LOCAL CRIMES AND NATURAL HAZARDS

Objective Characteristics: Similarities and Dissimilarities

The patterning of crime and natural hazards are similar in several respects. These points of similarity have implications for the psychological and social psychological sequelae of these events.

Rarity

First, they are both essentially rare events. Consider the following examples of each. In 1987, about 4% of all households contained a victim of a violent crime such as rape, robbery, or assault (Bureau of Justice Statistics, 1988). The U.S. rate of criminal homicide in 1982 was about 9.1 per 100,000 (Weiner & Wolfgang, 1985, p. 23). One's chances of experiencing a serious natural disaster such as a major flood, tornado, or earthquake are similarly slim. In 1984, 240 persons died in the U.S. from tornadoes, floods, and hurricanes combined (U.S. Dept. of Commerce, 1986). In 1985 the death rate from drownings, for example, was 2.4 per 100,000 (National Safety Council, 1986).

Of course, various types of crimes occur more or less frequently, and these rates shift over time. This is also the case with natural hazards. And,

rates of hazards and crimes do not match exactly. But the important point here is that serious crimes and serious natural hazards affect only a small portion of a region's or country's population in a given time frame such as a year. For the average person they are not likely to occur (Norris, in press).

A psychological sequela of this patterning is that individuals in general, with some exceptions (see below), are unlikely to be constantly vigilant towards crime and natural hazards. Neither crime nor hazards are uppermost in their concerns.

Furthermore, due to the low frequency in both cases it is difficult to "normalize" the experiences (Norris, in press; Norris & Murrell, 1988, p. 666). It is difficult for those experiencing a major disaster to integrate the event into a framework rendering the event meaningful and understandable. The same may hold true for local crime events.

Ecological Patterning

Many natural hazards and many crimes are ecologically patterned. For example, violent crimes are more likely in large urban areas than in suburban areas (Harries, 1980). Some neighborhoods within a city have much higher violence rates than other neighborhoods (Taylor & Covington, 1988, 1990). Similarly, some states are more earthquake-prone than others, and within a particular state some regions are much more likely to experience serious damage if an earthquake does occur.

Consequently, after the fact people will, in both cases, have nearby social contacts with similar experiences. With some natural hazards such as floods numerous people in a location are subjected to the same disaster at the same point in time. With a local victimization incident others nearby may or may not have had a similar experience at exactly the same time. But, if the local crime rate is high—and we are focusing here on local crimes and not victimization experiences per se—after a victimization many nearby others have had or know about similar experiences occurring recently. Thus in both cases there may be nearby others with similar histories, although the time frame in which those experiences were acquired differs across the two types of events.

One might expect that the psychological implications of this spatiotemporal patterning in the case of natural disasters would include increased community solidarity or social networking following an event. But expectations of support may be rudely disconfirmed following an event. For example, Kaniasty, Norris, and Murrell (1990) found that whereas about three fourths of flood victims anticipated nonkin help beforehand, only about one fourth of the victims actually reported receiving significant amounts of help after a flood.

In fact, disaster experiences can significantly abrade local social support networks. Kaniasty et al. (1990) found that amount of community destruction from a flood led to subsequent *declines* in expected social support from nonkin sources. Criminologists have suggested that exactly the same spiral of decline, albeit over a longer period, can occur with increasing crime in an area. Crime may "atomize" a community resulting in increased withdrawal and suspicion, and less neighboring and mutual aid (e.g., Conklin, 1975).

Most Serious Occurrences the Rarest

With crimes and natural hazards, event seriousness is inversely proportional to frequency of occurrence. For example, whereas larceny "touched" 10.7% of U.S. households in 1987, rape, agreed to be a much more serious crime, touched 1.4% of U.S. households (Bureau of Justice Statistics, 1988). With natural hazards injuries and property losses far outnumber lives lost, and hazards that kill fewer people far outnumber those killing many people (Kates, 1976, p. 407).

Thus, in both cases, people often base their worst case expectations on occurrences that are *not* the worst cases. San Franciscans may have a hard time realistically imaging that an earthquake 8.0 or higher on the Richter scale will have consequences much worse than the quake of October 1989 graded 7.1 on the scale. Similarly, residents in a neighborhood experiencing a wave of minor purse snatches may have a hard time realistically imaging the effects of a wave of a series of armed assaults in their locale. In short, it is difficult to normalize the very serious occurrences because they are so rare (Norris & Murrell, 1988).

Unpredictable Intervals Between Events

In a particular location, between-event intervals vary markedly for both serious crime and serious natural hazards. A neighborhood may go without a murder for several years, then two or three may occur within weeks of one another, as occurred in northwest Baltimore in late 1987 (Perkins & Taylor, 1989), dramatically elevating its violent crime rate. A southern seacoast town may be "hurricane free" for several years, then experience two in a week, as happened along the Florida Gulf Coast in 1988 with hurricanes Florence and Gilbert.

The random between-event intervals suggest that in both cases people will not try to be constantly vigilant with regard to the threat. There may be long periods when people give little thought to the threat, and then other periods when it receives much more attention.

Points of Dissimilarity

There are also several points of dissimilarity between the two types of threats. These dissimilarities suggest ways in which the two types of threats may be perceived or responded to differently.

With some natural disasters such as hurricanes future victims can be warned about specific occurrences. This allows them to take specific preparations to reduce the costs of the occurrence. With crime hazards one can take generic precautions to reduce loss—avoiding certain dangerous areas, not carrying a purse, or installing burglary alarms, for example—but these steps are not meant to forestall a particular imminent occurrence of the threat. Therefore in the case of a crime threat as compared to a natural hazard threat the utility of proactive, preventive measures may be more in doubt. Norris and Johnson (1988) found that precautionary activities had *no* effect on subsequent probabilities of victimization. When the threat actually strikes there are two further points of dissimilarity. In the case of a natural hazard a large number of people are adversely affected in a short time. The October 1989 San Francisco earthquake killed scores and left hundreds homeless in a period of 15 minutes. By contrast, in a city with a high violent crime rate (e.g., Washington, DC, in 1989) many persons are killed over time, but the time interval is much longer.

This may explain differing responses to these threats by the public and by agencies. In the case of a natural disaster, outside relief efforts and funds may pour in in a short period of time, and general concern for the affected residents may ratchet up. But in the case of a city or neighborhood with a high or increasing murder rate there is no outside assistance, and the local public agency response is more gradual, except in dramatic cases such as riots. The situation does not merit the same level of concern from outsiders.

Implications of Differences

These points of difference do not invalidate our approach. Our starting point is that there are similarities between natural hazards and crime rates, and similarities in responses to the two. To the extent that this *is* the case we can borrow conceptual categories and mechanisms from the one to help us understand the other. The points of disanalogy are likewise interesting. If there were *no* points of dissimilarity, we could wholesale apply models from one area to the other, and the puzzling aspects of links between disorder and responses to disorder might be completely understood (cf. Boyd & Richerson, 1985, pp. 30-31).

Similarities in Perception

There are also similarities in how hazards and crimes are perceived. Examining these similarities takes us beyond work on natural hazards to the broader work on perceptions of risks. Two of the systematic biases in how people observe risks have also been observed in the perceptions of crime work.

Very Rare, Memorable Events Overestimated, Common Events Underestimated

When judging the frequency of various lethal events (death from smallpox, car accidents, cancer, etc), people overestimate the frequency of very rare, spectacular hazards such as botulism, but underestimate the incidence of more frequent, less spectacular events such as strokes (Lichtenstein, Slovic, Fischhoff, Layman, & Combs, 1978). The same bias appears in perceptions of crimes (Taylor & Kagehiro, 1988). Respondents underestimate the frequency of more common victimizations, such as being a robbery victim, but overestimate very rare, somewhat spectacular events, such as a police officer being killed in the line of duty.

Unrealistic Optimism

Weinstein (1980) found that when people are asked to consider how likely it is that something bad will happen to *them* as compared to a *similar other,* they are unrealistically optimistic. They think of reasons lessening *their* chances, as compared to the chances of others who are pretty much like them, of falling prey to a disease or disability or bad luck. In a recent study of migrant farm workers chronically exposed to pesticides, a situation more closely analogous to the conditions of those living in high crime neighborhoods, Vaughan and Nordenstam (in press) also found evidence of unrealistic optimism, particularly among those who felt it would be tougher to find a job outside of farm work.

There is parallel direct evidence of unrealistic optimism in people's assessments of their chances of being a crime victim. Weinstein (1977) found that college students thought themselves less likely to be victimized than similar others.[3] Perloff and Felzer (1986) made a similar observation. Less directly

[3]Given this bias, it is not surprising that work with victims subsequent to the victimization incident indicates a substantial portion of postincident trauma is linked to relinquishment of a previously held "aura of invincibility" (Miller & Porter, 1983) which is another manifestation of unrealistic optimism.

parallel but nonetheless relevant is evidence from national surveys indicating that people think crime is worse, and worsening more quickly, in nearby neighborhoods as compared to their own neighborhood (DuBow et al., 1979).

Summary

Serious crimes and serious natural hazards are objectively similar in the following respects: They occur rarely, are more likely in some places than others, have a frequency roughly inverse to severity, and on a small area basis vary dramatically in the amount of time that may pass between two occurrences of the same type of crime or hazard. These similarities may give rise to perceptions of the two types of threats, and responses, which are similar in some respects. There are also important dissimilarities between objective characteristics of local crimes and natural hazards, and responses to the two broad classes of events. These dissimilarities do not invalidate the insights we might gain by exploring the points of similarity but merely point out limits in our analogic framework.

With regard to perceived characteristics, in the case of both hazards and victimization, frequencies of different events are misestimated similarly, and unrealistic optimism appears operative.

EXPLORING IMPLICATIONS OF THE HEURISTIC

So far we have examined two general areas of similarity between crime and hazards: objective similarities in temporal and spatial patterning, and distributions of severity; and similar biases in perception. These represent points of analogy between natural hazards and local crime rates. (There are, of course, very important points of disanalogy.) We extend the points of analogy further below. That is, we suggest that the mechanisms underlying some responses to disorder may be analogous to those explaining responses to natural hazards. More specifically we focus in on a puzzling aspect of the connection between local crime rates and responses to disorder: the very loose coupling between fear levels and local crime rates. We also suggest, although in a briefer and more tentative form, how the same heuristic might apply to another current conundrum: the mismatch between participation in local collective crime prevention efforts and local crime.

Local Crime Rates and Fear of Crime Not Strongly Linked

Individual cognitive or perceptual responses to crime include fear of crime, feelings of personal vulnerability, perceptions of personal risk, and assessments of the intensity of crime-related problems.

Although victims of crime have higher fear levels than nonvictims (Skogan & Maxfield, 1981), individual fear levels are weakly linked with local crime or victimization rates (DuBow et al., 1979; e.g., Taylor & Hale, 1986), even when a highly localized (e.g., census block) crime rate measure is used to predict individual fear levels.[4] People living in higher as compared to lower crime areas are not proportionally more afraid. Another aspect of this puzzle centers around the inverse relationship between risk of victimization and fear levels. The groups most likely to be victimized (young males) are least afraid, and those in least danger (elderly women) are most afraid (DuBow et al., 1979).

Criminal Justice Explanations

Criminal justice explanations for the slippage between crime and fear have been several. One explanation has focused on *indirect victimization* as a moderating variable (Skogan & Maxfield, 1981). According to this model, local crimes only inspire fear in other residents if they hear about the events through local social contacts. Local social ties amplify or spread the impact of the event, and increase fear levels. Evidence from several studies has supported this model (Covington & Taylor, in press; Taylor & Hale, 1986; Tyler, 1980). Nevertheless the model explains only a modest portion of residents' fear. In other words, even after taking account of both an individual's local social networks and the local crime or victimization rate, there is still considerable slippage between crime and fear.

A second popular criminal justice explanation of the slippage centers on social and physical *signs of disorder.* People may be more fearful of crime if they live in areas where local physical and social signs of disorder or incivilities are more extensive. Thus, individuals surrounded by more physical deterioration, vacant or unkempt housing, graffiti, litter, or "marginal" people hanging out, may have higher fear levels (Hunter, 1978; Lewis & Maxfield, 1980, Taylor, Shumaker, & Gottfredson, 1985; Wilson & Kelling, 1982). (The exact conditions under which incivilities are most fear-inspiring is not clear, and the impacts of incivilities may be conditional upon other setting parameters; Lewis & Salem, 1985.) Evidence shows individual-level links between perceptions of incivilities and fear levels (Covington & Taylor, in press; Taylor & Hale, 1986). At the neighborhood level, objective measures of incivilities may be fear-inspiring if the future of the neighborhood is in question (Taylor et al., 1985).

[4]For example, Taylor and Hale (1986) observed standardized path coefficients of less than .09 between crime and fear. Of course, the size of the relationship increases at higher levels of aggregation. But, it appears spurious and can be explained away by social class (Taylor, Shumaker, & Gottfredson, 1985).

This second model, like the first, is helpful. It does point out additional features of the local social and physical environment that can elevate fear levels (Taylor & Hale, 1986). Nevertheless, this model does not help us with the crime-fear slippage because the links between crime levels and incidence of incivilities, although strong (Taylor et al., 1985), are far from perfect. And again, as with the first model, even after taking incivilities into account, considerable variation in fear remains unexplained.

Hazards Explanation

Processes invoked to explain perceptions of hazards may be partially responsible for the slippage between local crime rates and fear levels. In particular the process of adaptation may be involved (e.g., Burton, Kates, & White, 1978; Saarinen, 1966). "Just as we adapt or habituate to a noise or odor, so too do we adapt to threats of disaster" (Fisher, Bell, & Baum, 1984, p. 27). People get used to living on flood plains or in drought-stricken areas or on earthquake faults. Exposure over time to *human-made* hazards can also lead in some cases to perceptual adaptation. Evans and Jacobs (1982) observed that longer term Los Angeles residents as compared to newer residents perceived less smog when shown various air quality slides. Of course some human-made hazards we do not adapt to. For example, Baum (1989) has found long-term stress effects among residents living around the damaged Three Mile Island nuclear power plant. In short, if the same or analogous processes shaping perceptual adaptation to natural and technological hazards are at work determining responses to disorder, over time people may perceptually adapt to living in a high crime area.

Among those who are victims, either directly or indirectly, part of the adaptation may arise from being "inoculated" by prior experiences against subsequent event-induced trauma. For example, prior exposure to a serious flood reduces the mental health impacts of a subsequent flood (Norris & Murrell, 1988). Whether inoculation can occur in the case of direct or indirect local crime experiences may depend on crime type and severity.

In sum, although inferences from negative findings must always be made with considerable caution, the nonexistent or extremely weak linkage repeatedly observed between local crime levels and fear may reflect perceptual adaptation to the chronic hazard of local crime. Part of the perceptual adaptation, for some crimes, may be driven by the inoculating effects of prior exposure.

Implications of Hazard Explanation, and Relevant Empirical Evidence

By implication then, at any one point in time, persons living with a high crime hazard may have experienced some degree of cognitive adapta-

tion to that hazard. All else equal, the degree of adaptation is probably a monotonic function of time exposed to the hazard in question. Therefore, controlling for age, and controlling for dangerousness of previous residence, newcomers to a high crime locale may be more concerned about conditions than long-term residents.

Such an implication receives support from Crenson's (1983) analysis of neighborhood leaders. He found that leaders of neighborhood organizations spearheading efforts to improve conditions were recent in-migrants to these locales, and were more concerned than others about the problems occurring there. In the language of the argument forwarded here: The most recent arrivals, who had experienced the least perceptual adaptation to the local threat, and were thus most "sensitive" to it, were the most likely to take action against the local threat.[5]

There is also a second, perhaps less obvious implication of the adaptation model for the relationship between fear and local disorder. If, across locales at one point in time, residents are experiencing varying levels of disorder, the slippage between fear and local disorder levels will be greater in locales where the level of disorder is higher, because residents in the higher threat contexts are experiencing a greater degree of perceptual adaptation. Stated more technically, the slope of subjective fear on objective indices of disorder will be flatter at higher disorder levels.

One readily available index to the amount of disorder in a locale are signs of physical and social incivilities. Wilson and Kelling (1982), Hunter (1978), and Lewis and Salem (1985) have argued that people do gauge the amount of crime in an area partly on the range and severity of local social and physical incivilities. At the neighborhood level actual incivilities correlate strongly ($>.60$) with actual reported crime rates (Taylor et al., 1985), and fear (Hope & Hough, 1988).

If we accept local social and physical incivilities as a rough index of local disorder levels, and if adaptation processes are at work, we would predict that the effect of incivilities on fear should "flatten out" at the higher incivilities levels. Stated in a regression framework: After controlling for the linear effect of incivilities on fear, we should observe a significant *negative* quadratic effect of incivilities on fear.

Empirical support for this expectation comes from a study of fear of crime levels in 66 Baltimore neighborhoods (Taylor et al., 1985). In that study

[5]A reviewer has asked whether new arrivals to a higher crime area are less adapted to the local disorder if their former area of residence was a low crime area. Although there is no direct evidence supporting this point, the implication of Crenson's (1983) analysis clearly supports such a suggestion. But there is simply no hard evidence indicating how much crime people expect as they move into an area, and how those expectations are shaped by the disorder levels of their previous residence.

teams of raters made detailed assessments of the physical and social features of over 1,000 street blocks across the neighborhoods. Interrater reliabilities were excellent (all intraclass correlations >.80), and principal components analysis of scales yielded a clear-cut social and physical incivilities factor (Cronbach's alpha = .86).

To test our hypothesis we regressed average neighborhood response to the question "How safe do you feel or would you feel while out alone in the neighborhood at night," on the social and physical incivilities factor described above. In addition to the expected linear effect of actual incivilities on fear (B = .22, beta = .57; $p < .01$, one-tailed), we also observed the expected *negative* quadratic effect (B = −.07, beta = −.28; $p < .05$, one-tailed test). This significant quadratic effect suggests a greater degree of collective adaptation to social and physical incivilities in areas where they are most prevalent. This significant negative quadratic effect is shown in Figure 1.

This collective perceptual adaptation depends to a great extent on individual-level dynamics and probably will be significantly eroded if and as more individuals living in the high crime area, who have not previously been a victim of a serious crime, are seriously victimized. Such episodes probably "wipe out" the adaptation, and resensitize individuals to the degree of local crime hazard. A third implication of the adaptation argument focuses on this very disadaptation.

Loss of adaptation to local crime rate can clearly occur if the individual is seriously victimized and has not been a victim before. We suggest that some disadaptation may also occur if the individual takes steps to cope with the local crime hazard. Taking such precautions may resensitize the individual to the amount of disorder occurring in his/her locale (Norton & Courlander, 1982). "Alarms, locks and the like simply make the threat of crime more salient" (Norris & Johnson, 1988, p. 175). While engaging in instrumental coping efforts such as avoidance of dangerous areas, or increased steps to protect property, one can be reminded of the amount of local danger, and/or the potential costs of being a victim.

If our suggestion is correct and enacting these protection or avoidance strategies results in some degree of disadaptation to the local crime rate, one would also expect these efforts to elevate fear levels. Recent evidence from three different studies indicates that it does; the evidence from a fourth study suggests that it does not. The first is cross-sectional; the others are longitudinal and thus allow inference of causality.

1. Liska, Sanchirico, and Reed (1988) analyzed the National Crime Survey focusing on the relationship between fear of crime and behavioral restriction. They unpacked the bidirectional relationship using a two-stage least squares model with instrumental variables. That is, they looked at the ef-

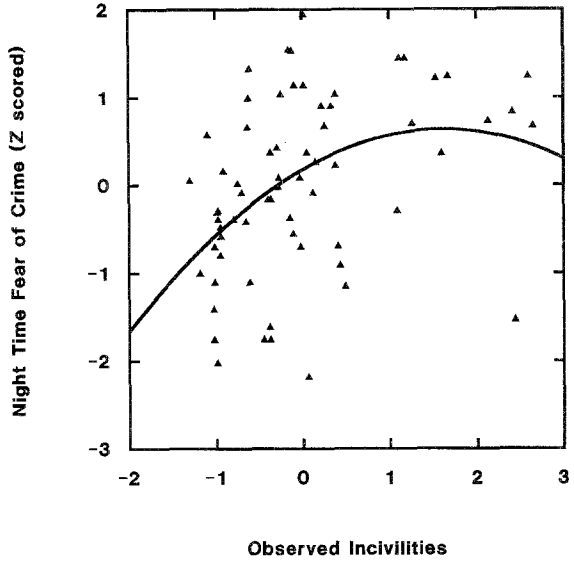

Fig. 1. Quadratic effect of social and physical incivilities on fear of crime. *Note.* Fear of crime item: "How safe do you feel or would you feel walking alone in your neighborhood at night?" Neighborhood average on this item has been z scored. Incivilities measure = principal components score based on several items measured by teams of raters. (See Taylor, Shumaker, and Gottfredson (1985) for details on this scale.) n = 66 neighborhoods. If the outlier neighborhood at bottom right is dropped, the quadratic effect is reduced but still noticeable and marginally significant.

fects of fear on restriction while holding the effect of restriction on fear constant, then also did the reverse. Such an analysis permits some inference of causality from a cross-sectional data set. They found that controlling for the effect of fear on restriction, increasing restriction was associated with increasing fear, and the size of the relationship varied by age group.

2. A panel-design study of adult residents of Kentucky found a cross-sectional positive relationship between fear and precautionary behaviors (Norris & Johnson, 1988) using a statewide sample. But, controlling for Time 1 fear, Time 1 precautionary behaviors were not linked to Time 2 fear of crime, measured a year later. The lagged, zero-order correlation was, however, positive (r = .23).

3. In contrast to the Norris and Johnson (1988) results with a statewide sample, findings from a panel design study with an urban sample from Baltimore City *did* observe a significant lagged relationship between precautionary behaviors and fear levels. Taylor, Perkins, Shumaker, and Meeks (1989)

interviewed 300+ residents on 50 street blocks at two points in time a year apart. They assessed behavioral responses to disorder such as avoidance of dangerous areas, household protection, and fear and worry levels, at both points in time.

Time 1 instrumental reactions to crime significantly elevated fear and worry levels observed at Time 2. Using a scale (Cronbach's alpha = .82) that measured the emotional aspect of fear of crime at Time 2, and controlling for Time 1 emotional fear, age, education, and indirect victimization at Time 1 and Time 2, residents who used more avoidance techniques at Time 1 had elevated fear levels at Time 2 (b = .15, beta = .13, $t = 2.28$; $p < .05$). Using a scale that measured worry (Cronbach's alpha = .86) about possible victimization at Time 2, and controlling for Time 1 worry, age, education, and indirect victimization at Time 1 and Time 2, residents who used more avoidance techniques at Time 1 had elevated worry levels at Time 2 (b = .51, beta = .15, $t = 2.46$, $p < .05$). This is the first study demonstrating, at the individual level, that instrumental coping with crime elevates fear and worry levels over time.

4. A methodologically rigorous examination of the effects of participation in community crime prevention groups was recently conducted in Chicago (Rosenbaum, 1988a; Rosenbaum, Lewis, & Szoc, 1986). This study's findings are most relevant to our hypothesis because the quasi-experimental design with control groups permits a fair degree of causal inference. Neighborhood Watch groups were started on several blocks in each study neighborhood, and participants were interviewed at two points in time. Also, at the same times, residents in matched control areas were interviewed. Investigators observed significant increases over time in the fear of crime levels of respondents in three of the four intervention areas, as compared to respondents in the matched control areas. In other words, many respondents organizing against crime experienced increasing fear levels as compared to matched respondents not organizing against crime. The researchers concluded the increased fear indicated a theory failure (Rosenbaum, 1988a).

By contrast, and following the disadaptation line of argument, we suggest that collective fear increased because participants in the intervention program experienced a sizable increase in perceived level of local danger. Participating in the program unhabituated them to the local crime hazard, and thus raised concern levels.

The above evidence from three out of four studies is consistent with the idea that people habituate to local disorder levels, and that instrumental coping resensitizes them to the local condition.[6] The parallel question natur-

[6]There are alternative processes that might explain these findings linking coping with fear. First, it could largely be an internal, cognitive dissonance reduction process. "If I'm involved in all this anticrime activity, it must be a serious problem." Or, in the case of the Chicago

ally arises: Do efforts to cope with natural disasters resensitize people to the hazard thereby increasing their levels of concern about the hazard? Unfortunately there do not appear to be studies looking at the effects, over time, of instrumental coping with natural hazards (F. Norris, personal communication, October 26, 1989). In responding to technological hazards such as Three Mile Island it appears that those with more social support—and social support can be considered a general coping mechanism—showed *lower* stress levels (Fleming, Baum, Gisriel, & Gatchel, 1982). But these results do not inform us about the effects of instrumental coping.

In sum, we have examined the loose slippage between fear levels and local disorder levels. We have suggested that a significant degree of adaptation to the local threat level occurs, analogous to the perceptual adaptation that occurs in response to natural hazards and some human-made ones as well. We have examined evidence in support of this notion suggesting cross-sectional adaptation to indices of local disorder. We have also suggested an additional point: Participation in individual or collective actions to reduce local disorder or protect oneself from it may resensitive individuals to the degree of local disorder, and thus increase fear levels. Some cross-sectional and longitudinal studies, the latter providing some degree of causal inference, support this second suggestion, although one longitudinal study does not. Parallel evidence detailing the effects of instrumental coping on concern about natural hazards is not available.

Implications for Understanding Behavioral Responses to Crime

The above line of reasoning may shed light on another puzzling aspect of the responses to disorder literature. It has been widely observed that there is not a monotonic relationship between the level of local disorder and the degree of involvement in collective or individual behavioral responses to disorder (e.g., Clotfelter, 1977; DuBow et al., 1979; Lavrakas, 1981). A variety of criminal justice explanations have been offered to explain this slippage. To cite just one: Lavrakas (1981, 1985; Lavrakas & Herz, 1982) has suggested that rates of participation in anticrime activities differ by area in part due to differential opportunities for collective involvement across various locations.

The heuristic we are developing here, however, suggests that intervening processes of adaptation may play some role in explaining the slippage.

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study, it could be largely social-psychological, a "risky shift." The more the groups talked about the problems, the more they agreed that the problems were more serious than they first thought. But the explanation offered here is more inclusive than these alternate explanations.

The perceptual adaptation that develops over time in high crime areas may result in lowered salience of the crime problem and lessened chances of collective organizing against crime, or of individual behavioral initiatives.

Differential adaptation may also help explain higher rates of participation in more middle-class locales.[7] In such settings serious crimes are not chronic and pervasive but are probably more intermittent. Since the hazard is not constant, it is probably not adapted to, and thus the perception of threat probably does not decline over time. For this reason residents may be more concerned about the threat and more likely to participate in collective anticrime actions.

We offer these applications of the crime-as-hazard framework to the understanding of levels of anticrime behavioral responses, at the individual and collective levels, in a tentative spirit. Obviously much more work is needed to clarify if and how these mediating processes might contribute to the explanation of levels and types of behavioral responses to disorder, and many additional factors, organizational and structural, need to be jointly considered. Nonetheless we think this potential application worthy of mention as an example of the generativity and potential utility of the heuristic being developed here.

FUTURE THEORY AND RESEARCH

We have suggested so far that there are similarities between the spatiotemporal patterning of crime and natural hazards, and, more importantly, between certain aspects of crime perception and hazard perception. These suggest points of analogy between the two phenomena. More specifically, processes influencing responses to disorder may be similar to some of the processes influencing responses to natural hazards.

The insights from this analogic framework point to processes that may help explain a puzzling finding in the reactions to crime literature; fear levels may be lower than "warranted" in high crime areas, because of perceptual adaptation processes. These same processes may also be relevant to the finding that behavioral responses to crime are less widespread in high crime areas than one would expect. Behavioral reactions to the possibility of victimization, such as avoidance of dangerous areas, may be associated with

[7]There is an extensive literature on the socioeconomic and structural determinants of participation in local groups (e.g., Bell & Force, 1956). Nevertheless, when structural and personal determinants of local participation are compared, the latter may outweigh the former (Crenson, 1983, Table 2.1). We think it would be an oversimplification to suggest that structural determinants of local participation can wholly explain the low rates of collective anticrime activity in high crime neighborhoods.

higher fear levels, and participation in collective crime prevention efforts associated with higher fear levels, because such activities may increase the perceptual salience of the local disorder level. Such actions may serve to remind one of the extant local danger.

How Far Does the Analogy Hold?

It is important to determine exactly how far the points of similarity in our analogic framework extend. Obviously, in certain key respects local crime rates and natural disasters are different and this therefore puts a limit on the heuristic proposed here. It may require very careful observation and analysis to determine these boundaries.

For example, take the relatively straightforward point that in a natural disaster such as an earthquake or hurricane many, many persons in a community are victimized in a short time. By contrast, in a neighborhood experiencing a serious outbreak of heinous crime only a small fraction of the community are victimized.

And yet, despite this difference, there are important similarities in responses. In both cases almost all of the community may work together to cope with the threat or its consequences. And, in both cases affected citizens may place demands on external agencies—local or state government in one case, and local police departments in the other—to respond to the situation.

But, there will also be important points of difference. For example, dramatic increases in a local crime rate do not devastate entire segments of community infrastructure in a short time the way natural disasters can. The effects of crime increases may be equally devastating on a community's infrastructure but may accrete over a period of years or decades as residents leave and financial institutions redline the area refusing to loan capital to house buyers and business owners. Theoretical development needs to articulate when it is useful and informative to consider the parallels between local crime rates and natural hazards, and when such parallels are not helpful.

In the future it may also be helpful to explore ways in which high local crime rates are similar to technological as compared to natural disasters. Baum, Fleming, and Davidson (1983) have discussed the differences between these two types of events, and suggested that because of these different event profiles the nature of the stress responses should differ. For example, technological disasters such as living near a leaking toxic waste dump, as compared to a natural disaster such as a hurricane, can persist over a long period, and have no clear low point when the worst damage is experienced. The differences in stress responses to the two types of hazard are not yet clear (Baum, 1989). But, if divergent response profiles do emerge it is important to deter-

mine in what ways local crime rates are similar to technological catastrophes as well as natural disasters.

Another important topic for theoretical articulation is to integrate the implications of viewing crime as a natural hazard with the insights from treating crime as an environmental stressor. Riger (1985; Lewis & Riger, 1985) recently explored some of the implications of considering crime as an environmental stressor. In support of this notion Taylor et al. (1989) have recently shown that fear of crime can be viewed as a short-term stress response to local disorder, and that over time, if coping is not enacted, fear may eventuate in impaired mental health. Undoubtedly it is instructive to view crime as an environmental stressor, and model the effects of local disorder as stress-related responses.

The treatment of local disorder as a stressor can coexist with the treatment of local disorder as a natural hazard. The two views seem generally complementary and may indeed strengthen one another. For example, the stress and coping perspective suggests that the perceived threat profile can be more important for determining responses than the characteristics of the stressor itself. The hazards literature, which has usually focused on differences among hazards—e.g., a 5 earthquake vs. an 8—as key determinants of responses, has also unearthed results pointing toward the importance of the perceived threat profile (e.g., the contrasting reactions to a flood of those who have been through a previous, more severe flood vs. the reactions of those who have not). Hazard researchers would do well to attend more closely to perceived threat profile characteristics; such work would be consonant with the more general extensive work on individual differences in risk perception (Arabie & Maschmeyer, 1988).

But there are also differences in these two perspectives deserving careful attention as this theoretical articulation progresses. For example, stress and coping models generally recognize that coping itself may have costs. This idea has not yet been woven into modeling of reactions to hazards; the work on hazards focuses largely on the benefits of coping. Matters such as these deserve throughtful scrutiny as theoreticians and researchers bring together the insights of viewing crime as a natural hazard with the insights afforded by viewing crime as an environmental stressor.

A final, general set of issues in need of future clarification concerns the impacts of contextual features on the adaptation and disadaptation processes discussed here. Several different neighborhoods may have similar high crime rates, but residents' degree of adaptation to those rates may differ because of other features of neighborhood environment. For example, less adaptation may occur in racially heterogeneous as compared to homogeneous settings, or in less as compared to more stable neighborhoods. Factorial ecology (Taylor & Covington, 1988) provides a useful overarching frame-

work for framing such queries at the community or neighborhood level. Further, the linkages between context and adaptation and disadaptation processes may not be unidirectional over time; the processes themselves may alter contextual features with the passage of time.

ISSUES OF POLICY

If the heuristic developed here is adopted for understanding links between crime and responses to disorder, several implications follow which are relevant to policy makers.

The perspective developed here suggests potential costs police and public officials should consider before deciding whether or not to encourage implementing focused victimization prevention programs in high crime areas. Prevention efforts focused solely on crime prevention, externally sponsored or internally initiated by the neighborhood leaders, may run the risk, in very high crime areas, of increasing participants' and residents' fear of crime levels. Participation in such efforts may be associated with people unhabituating to the threat profile; concern and fear may then increase; later on psychological distress may also increase (Taylor & Perkins, 1988).

The chances that implementation of focused crime prevention efforts will increase fear and subsequent mental distress levels will, of course, vary based on numerous other contextual factors besides the local crime rate. Nevertheless, if possible, such chances should be estimated, and weighed along with other factors, before deciding whether or not to encourage or support such implementation.

By implication then, if the aforementioned risks of implementation are sizable, policy makers may want to encourage more strongly than they already do *only* crime prevention programs that take a social problem orientation in high crime areas.

These two types of crime prevention—victimization prevention and a social problems oriented approach—have been contrasted by Podolefsky (1985). In middle-class areas, he has suggested, crime is seen as a separate problem, and thus it is attacked directly using victimization-prevention strategies such as Block Watch, or Town Watch, or Citizens on Patrol, or the purchase of security devices. But, by contrast, he has argued, in lower income, higher crime areas residents view crime as inextricably interwoven with other social problems such as lack of recreational and job opportunities. Thus in these areas residents do not attack crime directly but rather take an indirect, social problem oriented approach to crime reduction.

Many leaders in high crime neighborhoods take a social problem oriented approach to crime prevention anyway; they view crime as intimately in-

terwoven with a range of other social ills. The heuristic developed here suggests that if the risks of a crime prevention-focused approach may be sizable, policy makers might want to more fully support the social problem approach already being followed by leaders in these areas, even though the approaches may seem, in the eyes of the policy makers, tangential to the crime problem. It is encouraging that policy makers have shown some recent signs indicating increasing support of such approaches, as evidenced in the recent Eisenhower Foundation initiatives (Lavrakas & Bennett, 1988).

The two suggestions above point toward a more general policy point: the sensitivity needed on the part of policy makers and implementers to context (Taylor, 1986). Programs such as Block Watch that may be useful in low crime areas may be extremely counterproductive in other high crime areas. Although police departments and other agencies may wish to push one program for all locations, such a strategy could be ineffective at best and potentially harmful at worst.

Thus as police and citizenry work together to coproduce public safety the most effective role for police, as suggested by the model used here, may not be encouraging victim prevention programs such as Block Watch or Operation Identification. Rather, police might be most effective in helping residents articulate and implement social problem-oriented strategies. The current moves toward problem-oriented community policing are along these lines. (See Grene & Mastrofski, 1988, for some examples.) Our focus on crime as hazards supports these initiatives because, as compared to crime-specific prevention initiatives, their implementation is probably less likely to dramatically increase concern levels.

SUMMARY

We have suggested the following: Local crimes and natural hazards share several objective similarities and similarities in how they are perceived. Although local crimes and natural hazards are clearly different in numerous respects, these points of analogy suggest that in several ways responses to local disorder may be similar to responses to hazards. If this is the case, processes used to explain how persons respond to disasters may help explain a recurrent puzzle in the responses to disorder literature: the loose linkages between local disorder levels and fear levels.

Future research needs include developing a fuller understanding of how other contextual factors mediate or moderate the processes discussed here, how these processes are related to and may mediate behavioral responses to crime, and how these behaviors in turn influence perceptions. We have suggested here that anticrime behaviors may result in some disadaptation to the

threat, thereby elevating fear, and have provided evidence to that effect. In addition it is important to ascertain how the points of analogy between crime as a natural hazard and crime as an environmental stressor may be melded to develop more insight than afforded by either perspective considered singly. The heuristic developed here suggests some additional considerations for policy makers involved in anticrime or fear reduction programs.

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