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Testing Alternative Models of Fear of Crime

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TESTING ALTERNATIVE MODELS OF FEAR OF CRIME*

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I. INTRODUCTION

Fear of crime is a significant social problem. Recognition of the serious impact that fear may have on individuals and communities has emerged among policymakers, crime prevention practitioners, as well as researchers.[1] As a social problem, several aspects of fear of crime are notable. By the late 1970's, fear of crime was "touching" more households than ever.[2] This increase in fear to some extent paralleled the rise in crime levels during the 1970's. However, the longstanding and deep-seated nature of the fear problem is reflected in the fact that at the national level, although fear goes up as crime goes up, fear does not fall as rapidly when crime declines.[3]

    1 Images of Fear: On the Perception and Reality of Crime, 270 HARPER's 39 (1985).
    2 SOURCEBOOK OF CRIMINAL JUSTICE STATISTICS: 1981, at 181 (Figure 2.4) (T. Flanagan, D. Van Alstyne & M. Gottfredson eds. 1982).
    3 F. DuBow, E. McCABE & G. KAPLAN, REACTIONS TO CRIME (1979).

Such a pattern suggests that once the population is sensitized to fear-related issues, that awareness is unlikely to dissipate rapidly.

Partially in recognition of the severity and persistence of the fear problem, policies focusing directly on fear reduction have emerged in the last five years. Perhaps the clearest example of this is the recent field experiment conducted by the Police Foundation.[4] Following the Wilson and Kelling thesis that (1) minor "incivilities" inspire fear and that (2) the police could serve as the agents of order,[5] the project attempted to reduce fear levels by devoting police resources to community contact. Preliminary results suggest that fear levels may not have been reduced by the intervention, although it is difficult to pinpoint the exact "strength" of the treatment. Nonetheless, the important point is that policymakers are increasingly interested in implementing programs that deal directly with fear of crime.

In short, levels of fear of crime have increased and appear less variable than crime. Recognition of the "costs" of fear has widened to the point that programs targeted specifically at fear reduction have been implemented. Given these "real world" developments surrounding fear of crime, theoretical clarifications and empirical investigations of fear become all the more critical.

The way that fear is patterned, across people and places, however, continues to pose a conundrum for researchers. In fact, much of the theoretical attention to fear is an attempt to solve these riddles. Three points about the patterning of fear are significant.

First, the rank ordering of age-sex groups on fear levels is exactly opposite their ordering on victimization rates.[6] Young males are the least fearful but are victimized at the highest rate; elderly women are victimized at the lowest rate but are the most fearful. The notion of vulnerability, discussed below, is largely an attempt to resolve this discrepancy.

Second, many more people are fearful than are actually victimized, and fear levels are higher than would seem to be warranted by actual crime rates, even if we assume a liberal amount of unreported crime. This has led to a search for a crime "multiplier:" processes

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[4] T. Pate, W. Skogan & L. Sherman, Fear of Crime and Policing (Final Report) (1985).

[5] Wilson & Kelling, *Broken Windows*, 249 Atlantic Monthly 29 (March 1982). For a more detailed discussion of this model, see J. Greene & R. Taylor, A Closer Look at the Rationale Behind Community Policing (unpublished manuscript).

[6] M. Hindelang, M. Gottfredson, & J. Garofalo, Victims of Personal Crime: An Empirical Foundation for a Theory of Personal Victimization (1978); M. Maxfield, Fear of Crime in England and Wales (1984); Cook & Skogan, *Crime Against the Elderly*, in Public Policy and Social Institutions (H. Rogers ed. 1984).

operating in the residential environment that would "spread" the impacts of criminal events. The indirect victimization model, discussed below, is an example of a model constructed along these lines.

Third, the patterning of fear across areas does not match the patterning of crime levels. Although at least one study has found that actual victims of crime are more fearful than non-victims,[7] areas with higher crime or victimization rates do not always have residents who are more fearful.[8] This failure of fear levels to covary spatially with crime levels has led to an ongoing debate concerning the meaning or construct validity of fear of crime survey items.

Turning to the issue of construct validity, it is accepted that fear is "the emotional dimension of [people's] response to crime. . . ."[9] More recently, fear has been further circumscribed. Garofalo has suggested that fear taps the emotional response to possible violent crime and physical harm, while the term "worry" captures the emotional response to possible property crime (e.g., burglary, larceny).[10] Maxfield has concurred in the view that fear is linked to violent crime and worry to property crime.[11] The emotional "fear" and "worry" responses can be captured with items about " 'how afraid,' 'how uneasy' people feel about the occurrence of crime in general or a specific type of crime."[12] Most assume that the standard National Crime Survey "day fear" and "night fear" items ("How safe do you feel (or would you feel) alone at night in your neighborhood?") capture the fear people anticipate due to the possibility of violent crime.

A. THE DISORDER PERSPECTIVE

Nonetheless, despite these suggestions by researchers about how to tap fear of crime and what fear of crime questions "get at,"

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7 W. SKOGAN & M. MAXFIELD, COPING WITH CRIME (1981).

8 W. SKOGAN & M. MAXFIELD, *supra* note 7; McPherson, Realities and Perceptions of Crime at the Neighborhood Level, 3 VICTIMOLOGY 319 (1978); Taylor, Gottfredson, & Brower, Predicting Block Crime and Fear, 23 J. RESEARCH CRIME & DELINQ. 331 (1984); R. Taylor, The Roots of Fear (1984)(unpublished paper presented at the meetings of the American Society of Criminology). The strength of the correlation of course depends upon the unit of aggregation. At the street block level, correlations of around .2 have been observed. At the neighborhood level, correlations of .6 have been observed but appear to be a result of spurious correlations, with social class being the cause of both fear and crime.

9 F. DuBow, E. McCabe & G. Kaplan, *supra* note 3, at 4.

10 Garofalo, *The Fear of Crime: Causes and Consequences*, 72 J. CRIM. L. & CRIMINOLOGY 839, 840 (1981).

11 M. MAXFIELD, *supra* note 6.

12 F. DuBow, E. McCabe & G. Kaplan, *supra* note 3, at 5.

the empirical patterning of the covariates of fear of crime have not fully supported these suggestions. Consequently, Garofalo and Laub have asked: Is "fear of crime" more than "fear" of "crime?"[13] In other words, is fear of crime part and parcel of the general "urban unease" experienced by residents, or is it something only, and distinctly, tied to crime? It may be that as problems intensify in a neighborhood, anxiety increases, and fear of crime is part of this anxiety. This is in fact the assumption adopted by those linking social incivilities (such as public drunkenness) and physical incivilities (such as abandoned houses or graffiti) to fear.[14]

This disorder perspective, however, has been stated differently by different researchers. Hunter proposed that social disorganization, stemming from community decline, gives rise to social and physical incivilities and crime.[15] Social and physical incivilities are fear-inspiring not only because they indicate a lack of concern for public order, but also because their continued presence points up the inability of officials to cope with these problems. But, based on an analysis of conditions in ten neighborhoods, Lewis and Maxfield have suggested a somewhat different conceptualization.[16] They proposed that crime and incivilities bear a *conditional* relationship to fear. If *both* crime and incivilities are high, they suggested, then and only then will fear levels be high.[17]

Despite the popularity of the disorder perspective, empirical work to date has focused almost exclusively on *perceptions* of disorder. The only study that has provided a comprehensive assessment

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[13] Garofalo & Laub, *The Fear of Crime: Broadening Our Perspective*, 3 VICTIMOLOGY 242, 243 (1978).

[14] Social and physical incivilities are signs of lack of adherence to norms of public behavior. Social incivilities include such behaviors as public drinking, drunkenness or drug use, being noisy in public, or "hey honey" hassles. Physical incivilities include graffiti, litter, vacant houses, vacant or unkempt lots, houses and properties not well maintained, and abandoned cars. For a more extensive discussion of the conceptual status of incivilities, see Taylor, *Toward an Environmental Psychology of Disorder*, in HANDBOOK OF ENVIRONMENTAL PSYCHOLOGY (D. Stokols & I. Altman eds., in press). Hunter, Lewis and Maxfield, and Skogan and Maxfield have all suggested that fear may be partly attributable to actual and perceived disorder in the immediate urban environment. *See* A. Hunter, Symbols of Incivility (1978)(unpublished paper presented at the American Society of Criminology); Lewis & Maxfield, *Fear in the Neighborhoods: An Investigation of the Impact of Crime*, 17 J. RESEARCH CRIME & DELINQ. 160 (1980); W. SKOGAN & M. MAXFIELD, *supra* note 7.

[15] A. Hunter, *supra* note 14.

[16] Lewis & Maxfield, *supra* note 14.

[17] W. SKOGAN & M. MAXFIELD, *supra* note 7, at 110-15. Using the same data, Skogan and Maxfield reported a simple main effect between fear and perceptions of disorder (r = .66 at the neighborhood level). *Id.* at 111. They did not, however, report a partial correlation, controlling for social class variables, and thus it is not clear if the correlation is spurious.

of objective incivilities found that their impacts on fear were not large, nor were they apparent in all types of neighborhoods. Rather, in neighborhoods whose futures were uncertain, due to income levels that were neither so high as to guarantee stability nor so low as to guarantee continued dissolution, incivilities had a significant but not overwhelming impact on fear of crime levels.[18]

In sum, proponents of the disorder perspective have advanced several theoretical rationales to explain how and why fear of crime should be produced by social and physical incivilities. Links between fear and perceived incivilities have been observed but may be spurious (i.e., due to social class). There is some evidence for a conditional linkage between objective incivilities and fear. It remains to be seen whether, controlling for social class, perceived incivilities contribute to fear levels.

B. THE COMMUNITY CONCERN PERSPECTIVE

Another view, related to but distinct from the disorder perspective on fear, includes residents' perceptions of community dynamics. In Hunter's first explicit formulation of the impact of incivilities on fear, awareness of local disorder was expected to directly influence fear levels. Others have suggested, however, that community concern is part of the process.[19] Garofalo and Laub succinctly summarized this model. "[T]he fear of actual criminal victimization is inseparable from the unease generated by other minor forms in public deviance, and that the sum of these anxieties is the basis for the concern with community."[20] Lewis and Salem extended this argument to the neighborhood level.[21] According to their view, fear and community concern are intimately interwoven. They suggested that if crime was high or increasing in a neighborhood, *and* the neighborhood lacked certain structural characteristics such as strong local social ties and strong "vertical" ties to local power structures, then crime would inspire the perception of problems and consequent concern for where the community was headed. These evaluations, it was expected, would translate into fear.[22] Recent re-

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[18] Taylor, Shumaker, & Gottfredson, *Neighborhood-level Links Between Physical Features and Local Sentiments*, 2 J. ARCH. PLAN. & RES. 261 (1985).

[19] J. CONKLIN, THE IMPACT OF CRIME (1975); J. JACOBS, THE DEATH AND LIFE OF THE GREAT AMERICAN CITY (1961); J. WILSON, THINKING ABOUT CRIME (1975); Garofalo & Laub, *supra* note 13.

[20] Garofalo & Laub, *supra* note 13, at 250.

[21] *See* D. LEWIS & G. SALEM, CRIME AND URBAN COMMUNITY: TOWARDS A THEORY OF NEIGHBORHOOD SECURITY—FINAL REPORT (1980).

[22] Taub, Taylor, and Dunham's finding that high or increasing crime translated into fear if other worrisome changes were happening in the neighborhood at the same time

sults which indicate that the neighborhood context has more of an impact on fear than direct victimization[23] and that the perception of neighborhood problems is a strong correlate of fear[24] support the community concern perspective. They give substance to the notion that fear of crime is a result more of community dynamics than of crime dynamics.

C. INDIRECT VICTIMIZATION PERSPECTIVE

But, this is not to say that crime and related dynamics can be ignored in considering the origins of fear. In fact, one popular approach, the indirect victimization perspective, has attempted to clarify the processes linking crime and fear. It has two major points. First, it interprets sociodemographic correlates of fear as reflections of vulnerability to violent crime.[25] According to this line of reasoning, increased age and being female are correlated with fear because they reflect a heightened physical vulnerability to crime. If older persons or women are in fact attacked, the possible harm is greater than would be the case for males or younger persons. Further, according to this view, being black and of a lower income group reflects heightened social vulnerability. Poor blacks are more vulnerable because they are likely to live in areas with higher offender and offense rates, making them more likely to be victimized.[26] Stated differently, this perspective provides an interpretation of the linkages between sociodemographic characteristics and fear and focuses on specific demographics.

The second point of this model is that a criminal event sends out "shock waves" that spread throughout the community via local social networks. People who hear about a crime become indirect victims in that their levels of fear increase. Local social contacts serve to amplify the fear-inspiring impact of local crime. The indirect victimization model thus attempts to bring crime and fear into correspondence by adding a crime "multiplier."

Some studies support the indirect victimization view. Tyler's analysis of two surveys—one a multi-city survey of approximately

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would also support this perspective. R. TAUB, G. TAYLOR & J. DUNHAM, PATHS OF NEIGH-BORHOOD CHANGE (1984).

[23] Taylor, Taub & Dunham, *City Residents and Social Theorists: Some Microanalytic Surprises on Crime and the Causes of Neighborhood Decline*, in METROPOLITAN CRIME PATTERNS (R. Figlio, S. Hakim & G. Rengert eds. 1986).

[24] W. SKOGAN & M. MAXFIELD, *supra* note 7.

[25] W. SKOGAN & M. MAXFIELD, *supra* note 7, at 69-78.

[26] Sparks has used the more common sense term "ecological vulnerability" to describe the hazards arising from location. *See* R. SPARKS, RESEARCH ON VICTIMS OF CRIME: ACCOMPLISHMENTS, ISSUES AND NEW DIRECTIONS (1982).

1600 residents and the other a localized survey of over 200 house-
holds in Ventura, California—had mixed results.[27] Although crimes
heard about from others significantly increased fear levels amoung
the multi-city respondents, they did not significantly increase esti-
mates of personal vulnerability to crime among the Ventura group.
Skogan and Maxfield's re-analysis of the multi-city survey yielded
similar findings: individuals who knew a local crime victim had
higher fear levels, and fear was most increased if the crime heard
about was a robbery or stranger-to-stranger assault.[28] The authors
concluded that "some forms of vicarious experience with crime have
a significant impact on the distribution of fear. . . . Unlike direct
victimization, indirect exposure to crime is frequent and relatively
widespread."[29] Thus, in the indirect victimization perspective, con-
cern for specifying the crime-fear linkage, despite recognition that
the connection is not straightforward, is the key focus.

D. ACHIEVEMENTS AND LIMITATIONS OF RESEARCH

What are the achievements and limitations of the fear of crime
research? Two positive points are that (a) there is increasing atten-
tion to better specifying the multi-link and possibly conditional na-
ture of the relationship between crime factors and fear, and (b)
there is increasing attention to the contextual, non-crime factors
that may influence fear. Nonetheless, there are still several limita-
tions, some methodological or analytical, some theoretical, which
beset this area of research.

With regard to methodological or analytical matters, three
points deserve mention. First, in much fear research the aggrega-
tion problem has been ignored.[30] Most prior fear studies have been
based on clustered sample surveys. In such cases, the variance of
any particular item includes several sources of variation. More spe-
cifically, if the sample includes respondents from different neighbor-
hoods within one city, the total variance of an item (x1) includes
between-neighborhood sources of variance, individual-level sources
of variation, and error. That is:

item   = between-neighborhood + within-neighborhood +   error
variance   variance   variance   variance.

Analysis of raw correlations can lead to misleading results because

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[27] Tyler, *Impact of Directly and Indirectly Experienced Events: The Origin of Crime-related Judgments and Behaviors*, 39 J. PERS. & SOC. PSYCH. 13 (1980).

[28] W. SKOGAN & M. MAXFIELD, *supra* note 7, Tables 10-1 & 10-2.

[29] W. SKOGAN & M. MAXFIELD, *supra* note 7, at 180.

[30] For a discussion of this problem, see M. HANNAN, AGGREGATION AND DISAGGREGA-
TION IN SOCIOLOGY (1971).

area and individual-level sources of variation are confounded.[31] Thus, if we want to examine the individual-level dynamics of fear and understand why some individuals are more fearful than others, it is important to focus exclusively on individual-level variation and covariation, unconfounded by neighborhood differences. Such work has not as yet been done.

Second, even though increasing theoretical attention has been given to the causal impacts of non-crime neighborhood factors on fear, few studies have incorporated objective features of the neighborhood context.[32] In order to develop a better understanding of the linkage between neighborhood context and fear, objective indicators need to be included.

A third matter concerns outcome measures. Most studies have only a very limited coverage of fear of crime, usually comprising one or two measures.[33] Although the tradition of investigating fear items which follow the National Crime Survey format is well established, items tapping "how uneasy" people might feel can tap fear of crime as well. It would be worthwhile for fear researchers to branch out and include several different types of items for outcome measures, for two reasons. Such a step makes it possible to build scales, which are less "noisy" than single items. In addition, it helps avoid developing an extensive research tradition limited to very narrow outcome measures.

Theoretical development in the fear of crime area has been significant, as exemplified by the consideration of a widening web of "causes" of fear of crime. Nevertheless, due to lack of attention to the *process* of theory construction and testing, theory development has been hindered. To date, two very general models of fear of crime have emerged.[34] One, proposed by Skogan and Maxfield includes fourteen concepts.[35] Predictor variables include "personal

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[31] *See* M. HANNAN, *supra* note 30; Taylor, *Neighborhood Physical Environment and Stress*, in ENVIRONMENTAL STRESS 286, 310-17 (G. Evans ed. 1982).

[32] For example, the study by Taylor, Taub & Dunham, *supra* note 23, simply used dummy variables to capture the context of each neighborhood. Another example is the Northwestern RTC project, where, except for some detailed case studies, *see, e.g.*, Lewis & Maxfield, *supra* note 14, subjective indicators of neighborhood climate (most notably, residents' perceptions of various problems in their neighborhoods) rather than objective indicators were used. *See* W. SKOGAN & M. MAXFIELD, *supra* note 7.

[33] *See, e.g.*, W. SKOGAN & M. MAXFIELD, *supra* note 7, at 59-78.

[34] "Models," as we use the term here, denotes a "low-level" theory that includes specific concepts and perhaps variables. It is, however, more advanced than a "perspective," such as the three discussed above, in that the latter are open-ended in terms of the relevant concepts and may pay little attention to the specific structure of causal dynamics or level of analysis.

[35] W. SKOGAN & M. MAXFIELD, *supra* note 7, at 17 (Figure 1.1).

and household vulnerability," "city of residence," "neighborhood conditions," "media exposure," "victimization experiences," "personal communication networks," and others. Outcomes include "fear of crime," and "behavior." As an outcome, "behavior" is influenced by four sets of factors (e.g., "role constraints").

Garofalo has proposed a second general model of fear of crime.[36] It includes twelve categories of variables ranging from "position in social space," "other attitudes," "beliefs," "mediating factors" and "image of crime" to "fear of crime," "costs and options," and "social outcomes." The authors of both of these models are trying to capture the complex causal processes that inspire fear and its ensuing consequences. Regarding his model, Garofalo notes that "[i]t is complex, yet it is a simplication of even greater complexity."[37] This statement can be fairly applied to both models.

From a theory construction point of view, however, such model building is premature. Blalock makes several points regarding the process of theory construction which clarify the difficulties raised by models such as the two mentioned above. [38] First, he notes that

> theories. . . must contain lawlike propositions that interrelate the concepts or variables two or more at a time. Furthermore, these propositions must themselves be interrelated. For example, if one proposition relates variables A and B, a second relates C and D, and a third E and F, then there must be additional propositions enabling one to make deductive statements connecting these three propositions.[39]

The two models noted above do not satisfy this condition. The authors of the models do not connect together all of the different propositions. Second, even if all connections were made so that the models were completely closed, each model would contain on the order of sixty or more hypotheses.[40] It is difficult to imagine how all of these hypotheses could be tested in one study, particularly when some of the concepts are community-level measures such as "social outcomes" in the Garofalo model.

One might nevertheless argue that these two models are useful because they include concepts that are related to fear of crime. That is correct. From a theory-construction point of view, however, they amount to a "dragnet approach."[41] Under such an approach all

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[36] *See* Garofalo, *supra* note 10, at 843.

[37] Garofalo, *supra* note 10, at 842.

[38] H. BLALOCK, THEORY CONSTRUCTION (1969).

[39] H. BLALOCK, *supra* note 38, at 2.

[40] If N is the number of concepts, the number of pairwise connections are (N(N-1))/2.

[41] H. BLALOCK, *supra* note 38. Blalock explains:

[E]mpirically-minded quantitative sociologists sometimes in effect endorse an anti-

variables thought to be relevant to the phenomenon in question are "thrown in." Such "models," like those proposed by Skogan and Maxfield, and by Garofalo, are in effect untestable and useful only in the most preliminary stages of theory building.

A more appropriate process is one which is incremental.[42] Very simple models are first proposed and tested. Additional variables are gradually added, resulting in progressively more complex models which better capture the real-world dynamics of fear of crime. In short, although fear of crime is enmeshed in a complex web of causes and consequences, theoretical understanding of fear of crime will progress only if explicit, simple causal models are the starting point. In the fear of crime literature, such tests have not as yet been made.

E. SUMMARY

To summarize, the following points can be made. Fear of crime research has evolved in several directions in the last few years. Three "approaches" to understanding fear of crime have been suggested. The indirect victimization perspective recasts the sociodemographic correlates of fear into a vulnerability framework and attempts to specify the crime-fear link by examining the impact of local social ties. The perceived disorder approach argues that people are afraid because, in addition to crime, they witness signs of social and physical decay. This decay signals the impotence of the powers of the state, resulting in increased feelings of vulnerability. The community concern perspective builds on the disorder perspective by arguing that as a result of signs of physical and social decay people become concerned about the continued viability of their neighborhood and the quality of their neighbors. This heightened concern then translates into fear. None of these three approaches to fear of crime has been correctly tested. Proper testing of these approaches requires a data set that provides several objective meas-

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theoretical position by throwing numerous variables into a regression equation with the idea of selecting out that subset which 'explains' the most variance. To be sure, this kind of dragnet approach is useful as an exploratory device. . . but. . . can hardly be judged an efficient procedure. . . .

Id. at 2-3.

[42] "In order to develop deductive theories, one must ordinarily begin with very simple models that are totally inadequate to mirror the real world. By adding new variables and complications, a few at a time, one can then construct more realistic theories by what amounts to an inductive process." H. BLALOCK, *supra* note 38, at 3-4. Blalock further explains that "if they are to be simple, . . . theories must omit numerous explanatory factors." *Id.* at 6-7.

ures of the immediate residential environment, several fear outcome measures, and an analysis that recognizes the aggregation problem.

The purpose of our analysis is to provide such tests of these three perspectives. For each perspective a model will be formulated and tested. Five questions about this model testing arise. First, overall, how well does the model do in explaining the outcome? Second, which of the particular hypotheses (causal pathways) predicted by each model are supported by the data? Third, how well does the model "fit" the data? Fourth, which types of predictors have the most impact on fear? And, lastly, how well do the models perform vis-a-vis one another? Before we can do any testing, however, we need to explicitly formulate each of the models we will be examining.

II.   STATEMENT OF MODELS TO BE TESTED

A.   INDIRECT VICTIMIZATION

The indirect victimization model, represented as a causal diagram, appears in Figure 1.[43] The model hypothesizes the following. People who are more vulnerable such as women, low income individuals, blacks, or the elderly, are more likely to be victimized or to see crime. Those who are victimized or who have witnessed crime will pass this information through their local social networks. Local social networks channel the impacts of victimization. Those with more local ties will therefore be more fearful. Likewise, those who are more vulnerable will be more fearful. In addition, those who have experienced or witnessed crime will have elevated fear levels.

B.   PERCEIVED DISORDER

The perceived disorder model is depicted in Figure 2. It makes the following hypotheses. Socioeconomic status is associated in several ways with fear. First, those who have a lower socioeconomic status are likely to perceive more problems in their locale. In other words, lower socioeconomic status has an indirect effect on fear vis-a-vis impact on perceived problems. This results from living in less stable areas, from having less access to more desirable areas, and from having co-residents who rarely contribute to the upkeep of the locale and who may be less likely to observe the norms of public order than residents of higher socioeconomic status living in more stable locales. Lower socioeconomic status may also be directly

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[43] This model is based in large part upon portions of the model presented by Skogan and Maxfield. *See* W. SKOGAN & M. MAXFIELD, *supra* note 7, at 17.
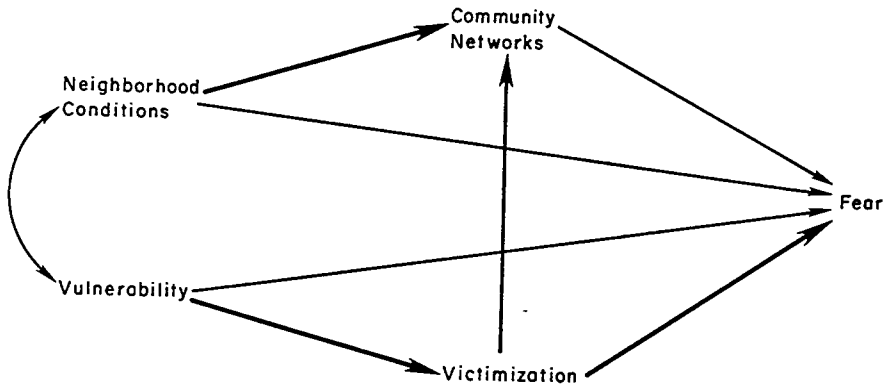
FIGURE 1
INDIRECT VICTIMIZATION MODEL

linked with higher fear levels. Due to less adequate police protection or to the diversity of the areas they live in, lower status residents may feel more vulnerable and thus more fearful.
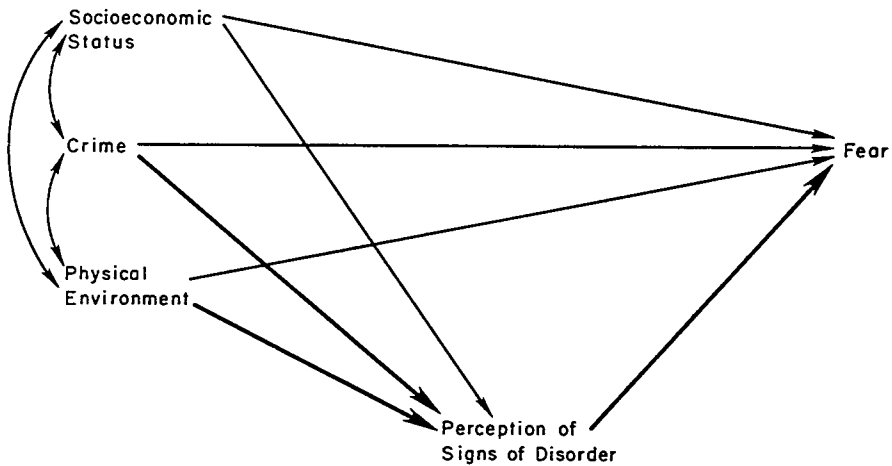
FIGURE 2
SIGNS OF DISORDER MODEL

Crime may contribute directly to increased fear. It may also contribute to fear via an increased perception of problems. Higher crime may be accompanied by higher rates of other disorderly behaviors. These disorders may result in residents perceiving more local problems.

Physical deterioration in the neighborhood may result in a

heightened perception by the residents of the seriousness or extensiveness of local problems. For example, survey respondents living in neighborhoods where vacant lots and houses are more extensive may report a higher incidence of physical upkeep problems than survey respondents living in neighborhoods where these problems are not as widespread. In addition, respondents in more dilapidated areas, with more vacant lots and houses, may also report a higher incidence of local social problems if vacant houses serve as havens for pushers or street people, and if vacant lots provide gathering places for youth groups.

The key causal sequence articulated by the disorder model is that both lower social class and a higher incidence of physical and social incivilities heighten the perception of local problems. This perception, in turn, elevates fear levels.

C. COMMUNITY CONCERN

The community concern model includes all of the hypotheses made by the disorder model. It differs, however, by adding several key hypotheses. (The model is presented as a causal diagram in Figure 3.) Specifically, the model makes the following additional pro-
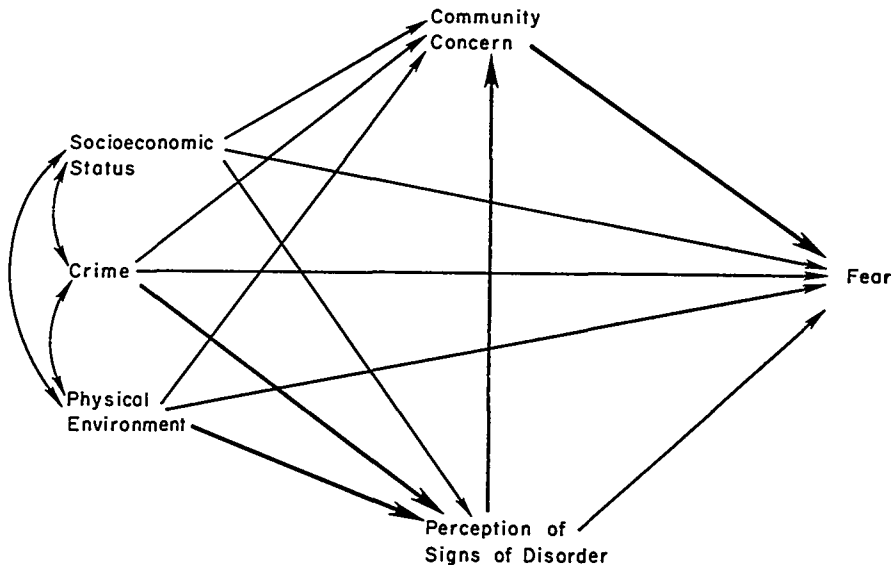
FIGURE 3
COMMUNITY CONCERN MODEL

posals. Witnessing crime or local physical and social problems may elevate levels of community concern. Such events may cause

greater concern about the future of the neighborhood and the quality of present and future residents. This uncertainty and concern may lead residents to feel more vulnerable and thus heighten fear. The model also allows that perceived problems, even if they do not induce higher levels of community concern, may still contribute to higher fear levels. It is expected, however, that perceived disorders will influence fear mostly via their impact on community concern. The key causal sequence in the community concern model leads from objective characteristics (e.g., crime, physical conditions, socioeconomic status) to perceived problems which in turn lead to concern, which in turn leads to fear.

III. METHOD

A. DATA SET

The data come from a study of six Atlanta neighborhoods.[44] The six neighborhoods were selected in physically adjacent pairs matched on racial composition and economic status. Further, one neighborhood in each pair had a "high" crime rate, defined by total Part I (serious) offenses per household, whereas the other had a "low" crime rate. The three neighborhood pairs included a white middle-income pair, a black lower-middle income pair, and a black lower-income pair.

A stratified, single-stage sample of households was drawn within each neighborhood to ensure a distribution across different geographic areas of the neighborhood and across properties with differing numbers of housing units per structure. One adult in each household contacted in the door-to-door interviews was designated as the respondent. In 1980, 80 to 93 completed interviews were obtained in each neighborhood, for an overall response rate of 77.3% and 523 completed interviews.

In addition to the surveys, the authors obtained crime information for the year 1978 on the basis of census blocks. Physical land-use data from a city-wide computerized file was also collected on a block level. The physical land use data obtained was quite extensive. Several measures were related to the concept of physical incivilities: vacant houses, vacant lots, residential/commercial mix on the block, and whether or not the street was on the neighborhood boundary. The presence of commercial properties is associated with incivilities because stores draw foot traffic, resulting in more

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44 This study was carried out by Stephanie Greenberg and her colleagues. *See* Greenberg, Rohe & Williams, *Safety in Urban Neighborhoods*, 5 POPULATION & ENVIRONMENT 141 (1982).

loiterers, litter, and other problems in these locations. The last measure may be associated with physical incivilities for two reasons. First, boundary streets tended to be wider, higher traffic-volume streets, often with commercial establishments on them. These kinds of streets would tend to have more loiterers, litter or graffiti. Second, Hunter has suggested that higher incidences of physical and social incivilities would be found at the edges of communities. He suggests that this occurs because boundary areas are less looked after and surveilled.[45]

In sum, the land-use information, although not providing an exhaustive measure of objective incivilities, included several key measures of incivilities or features linked to incivilities. In addition, the inclusion of these variables must be weighed against the fact that most prior studies on the fear of crime have included no objective measures of physical or social incivilities.

This Atlanta data set thus provides measures of all of the concepts that have been proposed in the above three models. Objective measures of crime, physical deterioration, and land use were available. The survey included items regarding witnessed victimization, fear, social ties, perceptions of problems, and community concern. It also included all of the sociodemographic information needed to develop fully specified models.

B. LOGIC OF ANALYSIS

In order to conduct this analysis, we first centered all survey, crime, and land use items by their respective neighborhood means.[46] Survey items were then transformed into individual-level deviations from their respective neighborhood means; land-use and crime data were transformed into block-level deviations from the respective neighborhood mean.

Using the deviation-scored variables, we built scales to reflect the concepts of interest. In most cases this was achieved via principal components analysis, although in a few instances we simply added up z-scored variables.[47]

We then began preparations for our path analysis. In the case of sociodemographics and vulnerability (the indirect victimization model suggests that women, blacks, and lower income persons are

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[45] *See* A. Hunter, *supra* note 14.

[46] The only two exceptions to this were gender and race. Centering the latter item was not required, because the neighborhoods were either all black or all white. Centering the former item was judged inappropriate.

[47] For full details on all aspects of scale building, see R. Taylor & M. Hale, Testing Alternative Models of Fear of Crime (unpublished final report).

more vulnerable to fear), a composite was built for each outcome using the procedure suggested by Igra.[48] We regressed each outcome on the explanatory variables for each concept and constructed a single composite variable for each concept using the individual unstandardized b weights of the items.

In order to develop composites for each concept, only those scales or variables which reflected that concept and made a significant unique contribution ($p < .05$) to the outcome were used. In most instances this meant that a concept was represented by one scale or item. Unstandardized b weights were used to build two composites in cases where more than one scale made a significant unique contribution to the outcome.

The following example may clarify this procedure. Consider two disorder scales, one reflecting physical problems (x_1) and the other social problems (x_2), each of which correlates significantly ($p < .05$) with fear (y_1) such that $r_{x_1y_1} = .15$ and $rx_{2y2} = .17$, both with significant unstandardized b weights ($b_1 = .10$ and $b_2 = .13$) when regressed on fear. In such a case, we made up a problem composite (C) such that $C = .10X_1 + .13X_2$. It was this composite that was entered in the path analysis.

The models proposed are fully recursive. Once a path model was estimated, paths with standardized coefficients of less than .05 were eliminated, and the trimmed model was estimated. We assessed the goodness of fit of the models (trimmed or untrimmed) by using the standardized path coefficients to reproduce the original correlation matrices. In assessing goodness of fit, we used the standard criterion that the correlation reproduced by the model must be within ±.05 of the original correlation.[49] Of course, many models can fit one set of data. Acceptable fit does not tell us which model is "best"; it simply tells us that that model is one fitting the correlation matrix. Nevertheless, such evidence is important because it tells us that there is a correspondence between the theoretical structure and the observed patterns.

Two important and testable assumptions of path analysis are (1) additivity (i.e., no interactions) and (2) linearity. We tested for interactions by carrying out regressions with the interaction terms added after the other variables. In two cases a path analysis was rerun after logging the predictors (plus a constant) which had significantly interacted. We tested for curvilinearity by adding power (squared)

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[48] Igra, *On Forming Variable Set Composites to Summarize a Block Recursive Model*, 8 Soc. Sci. Research 253 (1979).

[49] *See generally* F. KERLINGER & E. PEDHAZUR, MULTIPLE REGRESSION IN BEHAVIORAL RESEARCH (1973).

terms after all linear main effects had been entered and found that
the curvilinear form of the sociodemographic and/or vulnerability
composites merited entry on several models. That is, the relation
between the composites and the outcomes were curvilinear. In each
such case, however, the curvilinearity was slight.[50]

C.   PARTITIONING OF VARIANCE

As mentioned above, variables were centered by neighborhood
means. The results of that decomposition follow.

1.   Crime

The results of the partitioning of the variance of the crime data
indicated that over 90% of the variation in all Type I offenses, with
the exception of assault, was within-neighborhood variation. Stated
differently, the bulk of the variation between the high- and low-
crime areas occurred at the block level and not at the neighborhood
level.

2.   Other Variables

We carried out a similar decomposition for the other variables
to be used in our fear models. The proportion of individual-level
variation ranged from 50% to 100% across the items, and averaged
93%. That is, across all of these items—which reflect social dynam-
ics, perceived problems, neighborhood expectations, fear, etc.—
93% of the variation is a property of individuals or blocks rather
than a property of a particular neighborhood. Thus, after removing
between-neighborhood variation from the data set, there is still con-
siderable remaining variation.

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[50] Four reasons convinced us the curvilinearity was modest. First, the tolerance of
the power term was always much less than .01, suggesting that the curvilinearity repre-
sented a very small portion of the composite. Second, we compared the bivariate scat-
tergrams of the composites with the outcomes. No marked curvilinearity was evident,
and, in fact, the plots were quite elliptical. Third, when we logged the curvilinear pre-
dictor variables, no sizable increments in R^2 were observed. The changes were typically
.2%-.3%. Finally, if we "forced" the (squared) term into the regression, "beta bounce"
appeared—i.e., the beta for the composite became significant in the opposite direction.
There were also very sizable increases in the standard error of the betas for these vari-
ables. This suggests that the power term was extremely colinear with the linear form of
the variable and contributed little uniquely. For these reasons, we persisted in assessing
and reporting recursive causal models, despite slight evidence of curvilinearity. Those
who may disagree with our analyses, despite the above reasoning, should simply focus
on the interpretation of our models' direct effects, which represent the betas we would
have obtained as the final step in a multiple regression.

D. OUTCOME MEASURES

One of the valuable features of this data set is that it includes several fear of crime variables. Two items assessed emotional reactions to possible person-to-person confrontation or violence. One item asked how fearful the respondent would be if approached at night by a stranger asking directions. Another asked how uneasy the respondent would be if he or she heard footsteps behind him or her while walking in the neighborhood at night. These items seem conceptually close to the standard National Crime Survey fear of crime items. In fact, these items may be better because the situation is described more specifically for the respondent.

Another five items asked about the possibility of personal harm but used a "worry" instead of an "afraid" standard. One item simply asked the respondent how worried he or she was about being a crime victim. The other four questions concerned street robbery. First, the respondent was asked how worried he or she was about being held up "within two blocks of home." Second, the question was repeated but the respondent was asked to consider a different location, i.e., "elsewhere in the neighborhood." Finally, substituting other household members for the respondent as the possible victim, these two questions were repeated. These items, although they use a "worry" standard, qualify as fear of crime items because they tap "the sense of danger and anxiety produced by the threat of *physical harm*."[51]

The final item concerned what Maxfield and Garofalo call "worry:" the reaction to possible property loss.[52] In this item the respondent indicated how worried he or she was about a break-in while no one was home. Although this question tapped a reaction to possible property crime with no possibility of confrontation, rather than a reaction to possible violent crime, we decided to analyze this item along with the others. If it were a conceptually distinct reaction, it would not covary closely with the other items, and we could drop it from further consideration. If, however, it did covary closely with the other items, it would suggest that "worry" is not as distinct from "fear" as some researchers have proposed.[53] In this case, adding the item would help to build more reliable (i.e., internally consistent) scales.

We carried out a principal components analysis of these outcome measures. Two components, with eigenvalues greater than

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[51] Garofalo, *supra* note 10, at 840 (emphasis supplied).
[52] *See* M. MAXFIELD, *supra* note 6; Garofalo, *supra* note 9.
[53] *See, e.g.,* M. MAXFIELD, *supra* note 6.

one, were extracted. These two components accounted for 52% of the covariation in the matrix. There were five items which loaded heavily (a > .40) on the first component. The coefficient alpha for the scale based on these five items was a respectable .87. The five items were: worry about a break-in while away, worry about being held up within two blocks of home, worry about being held up elsewhere in the neighborhood, worry about some member of the family being held up within two blocks of home, and worry about some family member being help up elsewhere in the neighborhood. This scale clearly taps anxiety or worry about street robbery. For shorthand we will label this a "worry" dimension, bearing in mind that our use of worry here is different from the connection made by Garofalo and Maxfield between worry and property crime.

Three items loaded heavily on the second component. These three items produced a scale with an acceptable Cronbach's alpha of .69. The three items on this scale were: worry about being a crime victim, fear if approached at night by a stranger asking directions, and unease when hearing footsteps behind while walking in the neighborhood at night. Because these three items seem to capture the more visceral aspect of emotional response to possible confrontation or harm, we label this second scale a "fear" dimension.

We think it is important that we have been able to identify two independent dimensions of fear of crime. The major difference between the two scales seems to be that the worry dimension captures a less immediate, less visceral aspect of the fear response, while the fear dimension captures a more aroused and intense aspect. Because it would be possible for the three models to be examined to perform differently for the two outcome dimensions, we thought it imperative to apply the models to both outcomes. If the models worked equally well with both outcome dimensions, this would underscore the generality of the models. Should the models work better for one outcome than another, this would reveal their limited applicability. In short, even though the analysis is lengthened considerably, it is important theoretically to pursue the application of the posited models to both outcome scales.

E.   OTHER SCALES

1.   Crime

Principal components analysis of serious crime rates yielded three components with eigenvalues greater than 1.0 which together accounted for 54% of the crime variation. The first component reflected crime related to commercial establishments or to the people

they may attract—commercial burglaries, larcenies, and robbery. The crimes of auto theft and rape made up most of the second component. These crimes probably clustered because they occur on streets where there is little surveillance. Vigilant residents or pedestrian traffic would probably have interfered with the commission of both of these crimes. Thus, blocks with vacant or nonresidential land use should have had high scores on these crimes. The third component included residential burglaries, assaults and, to some extent, murders. This reflected blocks with a disorderly street life. Our interpretation of the first two crime components was supported by the patterns of correlations of crime-component scores with physical land-use variables. Thus, at the block level, we were able to identify three dimensions of crime variation. The other crime measure we used was a survey item in which the respondent indicated whether or not he or she had witnessed a street crime (e.g., mugging, pursesnatching) in the last six months.

2.   Community Networks

Through principal components analysis, we identified three dimensions of local networks. The first dimension indicated the degree of involvement in neighborhood activities and likelihood of sharing information with neighbors (*localized orientation*). The second dimension consisted of several items reflecting a *perceived similarity* with co-residents. Finally, the third dimension contained items reflecting the availability of *local social ties* in the form of friends and relatives.

3.   Community Concern

Two dimensions were identified by principal components analysis. One dimension reflected the perception of whether the neighborhood was deteriorating. People with a high score on this dimension felt that their neighborhood had worsened in the last two years, that it would be a worse place to live two years in the future, and that activities in the neighborhood were largely beyond their control. The second dimension reflected how the neighborhood compared to other neighborhoods. People with a high score on this dimension felt that their neighborhood was less safe compared to the rest of Atlanta. Additionally, such people planned on moving in the next two years, suggesting that they had a safer place to go.

4.   Perceived Problems

Three clear dimensions were identified through principal com-

ponents analysis. People with a high score on the first dimension perceived that a variety of *physical problems* afflicted their neighborhood such as vacant lots, empty houses, negligent slumlords, and neighbors who did not take care of lawns or garbage. The second dimension reflected *social problems* such as noisy neighbors, drugs, and loitering teens. The third component reflected problems stemming from *sex-related business* such as prostitution and adult bookstores.

5.   Land Use

Principal components analysis of the land-use variables on deterioration and lack of upkeep yielded two dimensions. One component reflected blocks with a high incidence of vacant land or nonresidential land use. The second component reflected blocks at the boundary of neighborhoods with high-volume traffic arteries. In some analyses, we entered the boundary-block variable by itself because it correlated with some outcomes more clearly.

IV.   RESULTS AND DISCUSSION

We present all of our path analyses for Worry and for Fear sequentially. We report the indirect victimization model, the signs of disorder model, and finally the community concern model. We then make some comparisons across models.

In these analyses we employed the following conventions. First, correlations $> .07$ are significant at the $p < .05$ level (one-tailed test), and predictors with correlations this large or larger could be included in the path models. Second, higher scores on a variable or scale always mean more of the quality described by that variable or scale. Third, residuals which are reported are the square root of $(1 - R^2)$. Fourth, following Kerlinger and Pedhazur, if the correlations reproduced by the model are within $\pm.05$ of the original correlations, the model is accepted as providing a "good" fit with the data.[54] Fifth, pairwise deletion matrices are used thoughout with significance tests based on the smallest n. Finally, we report *adjusted* total R^2 for each outcome.

A.   PREDICTING WORRY

1.   Indirect Victimization Model

The zero order correlations for the indirect victimization model appear in Table 1. Vulnerability variables (i.e., race, age, income,

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[54] F. KERLINGER & E. PEDHAZUR, *supra* note 49.

gender) do not merit entry in the matrix of predictors either alone or as a group.

TABLE 1
INDIRECT VICTIMIZATION MODEL PREDICTING WORRY

	SOCIO-DEMOGRAPHICS (SDW1C)	CRIME SEEN (VICTIM2)	COMMUNITY NETWORKS (COMMW1C)	WORRY (FWORRY1)
SDW1C	1.0	.052 (.052)	.091 (.091)	.184 (.207)
VICTIM2		1.0	.181 (.181)	.152 (.152)
COMMW1C			1.0	.276 (.274)

NOTE: Original correlations, and those reproduced by model (in parentheses). SDW1C and COMMW1C are composite variables. SDW1C = .162 (Number of adults in household) + .25 (renter status). COMMW1C = .25 (localized activities) − .08 (perceived similarities) + .1 (relatives and friends in neighborhood).

Two variables (shown along with their b and beta weights when the outcome is regressed on the cluster of sociodemographic variables) appear in the sociodemographic composite: number of adults in the household (b = .16; beta = .15; $p < .01$) and renter status (b = .25; beta = .12; $p < .05$). Thus, worry is higher both in houses with more adults and in rental households.

The community networks composite includes all three network dimensions. The b weights produced when the outcome is regressed on the three dimensions of this cluster are: localized activities (b = .24; $p < .001$), perceived similarities (b = −.08; $p < .05$), and nearby relatives and friends (b = .10; $p < .05$). Activities and local ties increase worry, similarity depresses it. Although all three contribute to worry levels, the first dimension—localized activities and information networks—clearly has the strongest impact. (Since these variables are principal components scores, b and beta weights are equivalent.)

The results of the path analysis appear in Figure 4. Overall, the model explains a significant amount (10.6%) of the varience in worry (F(3,499) = 19.72; $p < .001$).

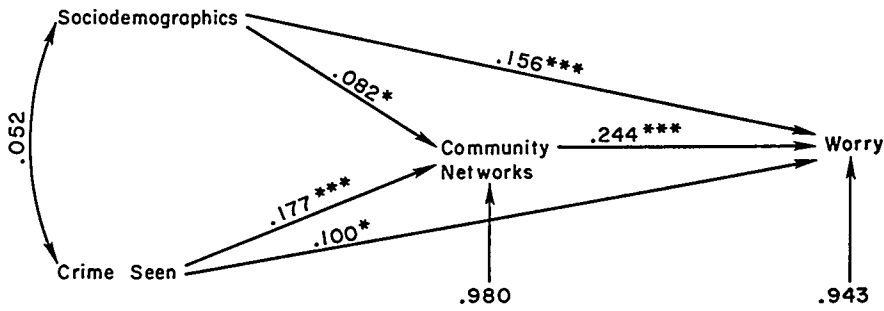Concentrating first on the direct effects on worry, we see that

FIGURE 4
INDIRECT VICTIMIZATION MODEL PREDICTING WORRY

the strongest contribution, as measured by the path coefficient, is made by the networks composite (.24), followed by the soci-odemographic composite (.16), and, finally, by crime (.10). In other words, localized activity patterns, information networks, and social ties contribute more to worry than do household makeup or crime. The worry factor includes two items specifically concerned with worry about family and friends, partially explaining why community networks play such a strong role. It also explains why the number of adults in the household is associated with worry, because there are more people about whom to worry.

Focusing on the indirect effects on worry, we see that 30% of the total causal impact of witnessed crime is channeled via commu-nity networks, in contrast to the 70% which is channelled as a direct effect. The effect of witnessed crime on networks is sizable and sig-nificant (.18), suggesting that witnessed crime leads to crimes being shared with others. Stated differently, this effect suggests that hav-ing seen street crime may act as a stressor, leading witnesses to in-quire about local events from co-residents. Yet, even considering both direct and indirect effects, the total causal impact of witnessed crime is less than the impact of either of the other two predictors. (The total causal impact of networks was .24; sociodemographics' impact was .18; and witnessed crime was .14.) The bulk of the causal impact of the sociodemographic composite (92%) is in the form of its direct effect on worry, while only 8% is channeled via networks.

As expected, networks and to a lesser extent witnessed crime, contribute to worry. Contrary to expectations, vulnerability does not appear relevant. Also, as predicted by the model, some of the impact of crime is channeled via local social networks. However, the size of this pathway is smaller than anticipated by proponents of this

model. Finally, the reproduced correlations demonstrate that the model does produce an acceptable level of fit with the data (see Table 1).

2.   Disorder Model

The zero order correlations for the disorder model appear in Table 2. The sociodemographic composite is the same as that used in the indirect victimization model. The problems composite is weighted mainly toward social nuisances (beta = .27; p < .001) but also includes physical problems (beta = .08; p < .05).

TABLE 2
SIGNS OF DISORDER MODEL PREDICTING WORRY

	SOCIO-DEMOGRAPHICS (SDW1C)	CRIME SEEN (VICTIM2)	LIVE ON NBHD. BOUNDARY (V48DEV)	PERCEIVED PROBLEMS (PROBSW1C)	WORRY (FWORRY1)
SDW1C	1.0	.052 (.052)	.108 (.108)	.125 (.128)	.184 (.184)
VICTIM2		1.0	.089 (.089)	.295 (.295)	.152 (.152)
V48DEV			1.0	.105 (.104)	.082 (.041)
PROBSWIC				1.0	.282 (.279)
FWORRY1					1.0

NOTE: Original correlations, and those reproduced by model (in parentheses). SDW1C and PROBSW1C are composite variables. See TABLE 1 for description of SDW1C. PROBSW1C = .08 (physical problems) + .27 (social nuisance problems).

The results of the path analysis appear in Figure 5. The model explains a significant amount (10.1%) of worry (F(4,498) = 13.99; p < .001). Focusing first on the direct effects on worry, the problems composite has the biggest causal impact (.24), followed by sociodemographics (.15). Witnessed crime has a nonsignificant impact on worry in this model. Because living on the neighborhood boundary has less than a .05 direct impact on worry, we trimmed that path from the model.[55] The essential thesis that perceived signs of disor-

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[55] Living on the neighborhood boundary was the only variable of all the objective indices of incivilities available that had a significant zero-order correlation with the outcome. Although we have very good measures of objective incivilities, those measures did not perform as well as anticipated. This in no way impugns, however, the qualities of those measures which were based on reliable land-use files.

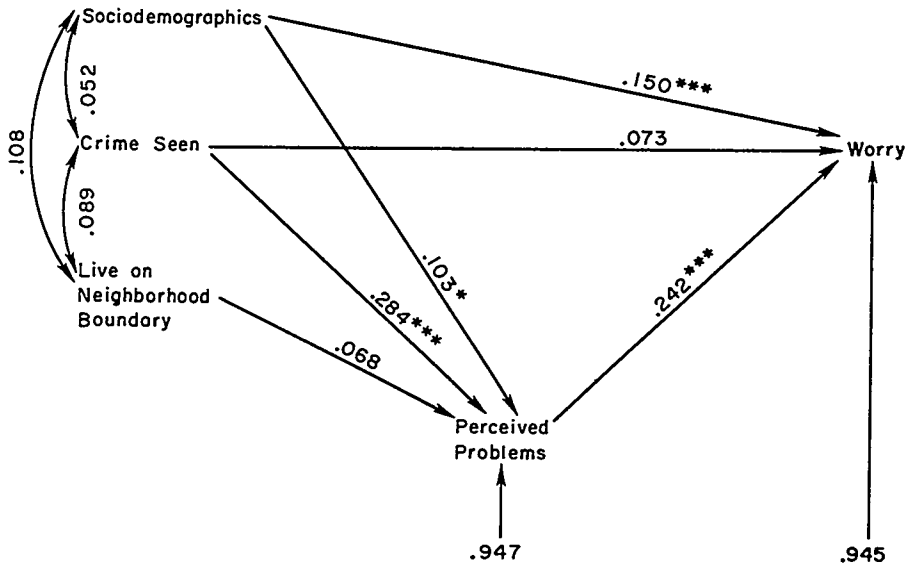der lead to worry is thus confirmed. The results, however, do not confirm the objective form of the theory.

FIGURE 5
TRIMMED SIGNS OF DISORDER MODEL PREDICTING WORRY

A focus on indirect effects helps clarify the role of the witnessed crime. The indirect impact, channeled through perceived problems, constitutes almost half (58%) of the total causal impact of witnessed crime. Even if we consider both direct and indirect causal channels, however, witnessed crime has less of an impact on worry than does the sociodemographic composite. In contrast to witnessed crime, only 17% of the total causal impact of sociodemographics is channeled through problems. Witnessed crime (.28) and sociodemographics (.10) determine problems.

In short, perceived problems have a strong effect on worry. Witnessed crime has a weak direct effect on worry but a sizable indirect effect via perceived problems. Contrary to expectation, objective physical conditions have no significant effects on problems or worry. In light of this, the central thesis of the disorder model should be revised. The revised thesis is that witnessed street crime rather than social and physical incivilities causes perceived problems which lead to higher fear levels.

3. Community Concern Model

The zero order correlations for the community concern model

appear in Table 3. The relevant community concern scale is the negative comparision of the neighborhood with other areas. The sociodemographic and problems composite variables are the same as those that appear in the disorder model.

TABLE 3

COMMUNITY CONCERN MODEL PREDICTING WORRY

	CRIME SEEN (VICTIM2)	LIVE ON NBHD. BOUNDARY (V48DEV)	PERCEIVED PROBLEMS (PROBSW1C)	COMMUNITY CONCERN (FCOMCON2)	WORRY (FWORRY1)
SDW1C	.052 (.052)	.108 (.108)	.125 (.128)	.046 (.040)	.184 (.185)
VICTIM2	1.0	.089 (.089)	.295 (.295)	.167 (.163)	.152 (.151)
V48DEV		1.0	.105 (.085)	−.050 (−.068)	.082 (.048)
PROBSWIC			1.0	.376 (.378)	.282 (.279)
FCOMCON2				1.0	.124 (.093)
FWORRY1					1.0

NOTE: Original correlations, and those reproduced by model (in parentheses). SDW1C and PROBSW1C are composite variables; see TABLES 1 & 2 for description.

The results of the path analysis appear in Figure 6. Overall, the model explains a significant amount (9.4%) of worry ($F(5,307) =$ 6.37; $p < .001$). The pattern of direct effects on worry is the same as in the disorder model because we trimmed out the direct effect of community concern due to a very small coefficient of .02. Problems have the biggest direct effect (.24), followed by sociodemographics (.15) and witnessed crime (.07).

Several features of this model are of interest. Most significantly, community concern is not linked to worry. Residents' concern and negative evaluations about the neighborhood do not "translate" into higher fear levels. Second, the prediction of community concern itself is intriguing. As anticipated, perceived problems strongly inspire (.37) community concern. Also, objective physical conditions such as living on a neighborhood boundary rather than an interior street surprisingly are negatively associated with concern—persons living on the boundary are less concerned. Witnessed crime contributes to concern predominantly by its impact
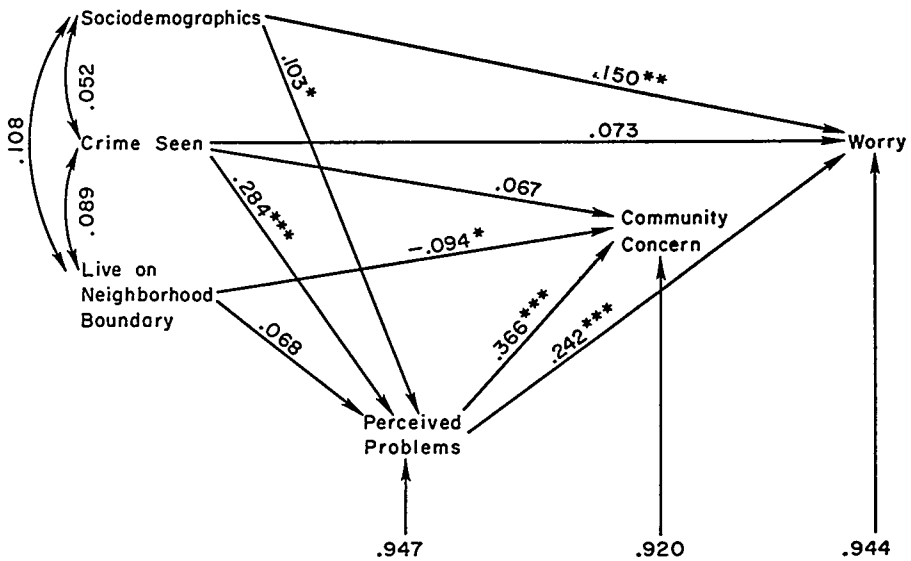
FIGURE 6
TRIMMED COMMUNITY CONCERN MODEL PREDICTING WORRY

on problems (87% of its total causal impact on concern). Finally, the model produces an acceptable fit with the data.

This analysis of the worry dimension yields several insights into the community concern model. First and most importantly, concern does not result in higher fear levels as previously hypothesized. Second, concern and perceived problems are strongly linked as hypothesized. Third, contrary to the hypothesis, incivilities do not inspire perceived problems and concern; crime witnessed, however, does heighten levels of concern, mainly through its impact on perceived disorder.

4. Summarizing Models Predicting Worry

All of the models explain roughly 10% of worry. In two of the models—indirect victimization, and disorder—the key mediating variables have the largest direct impact on the outcome. Significantly, this indicates that the social processes identified by the indirect victimization model and the psychological processes specified by the disorder model are key predictors of fear levels. The sizes of the direct impacts of these key variables also indicate, in the case of both models, that these processes mediate the impacts of objective conditions, such as witnessed crimes, on fear levels.

For the community concern model, however, this did not turn

out to be the case. Community concern, once we controlled for perceived disorder, made no independent contribution to predicting fear levels. The key mediating perception identified by this model was not relevant to the worry dimension of fear.

Two other points also emerged from the analyses. First, although several objective measures of incivilities were available such as abandoned housing and vacant lots, few were relevant to worry or even to perceived problems. This lack of relevancy suggests that the link between objective disorders or incivilities and the perception of these incivilities is by no means straightforward. Second, two types of crime variables could have been included in these models: crime measures based on crimes reported to the police or crimes witnessed by the respondents. Of these two, only the second merited entry in the models. Witnessed crime had a much greater impact on fear than crime rates on the block on which the respondent lived.

B. PREDICTING FEAR

The second dimension of fear of crime is the Fear scale. Applying the models to this second dimension is somewhat of an effort to replicate the results obtained with the Worry scale.

1. Indirect Victimization Model

The zero order correlations of the indirect victimization model predicting fear appear in Table 4. Two composite variables are included. Vulnerability includes being female (b = .26; beta = .15; p < .01) and lower income (b = −.04; beta = −.13; p < .01) and is significantly associated with higher fear levels. The sociodemographic composite is composed of households with more adults (b = .17; beta = .15; p < .01) and nonrental (i.e., homeowner) households (b = −.29; beta = .13; p < .05) and is associated with lower fear levels.

The results of the path model appear in Figure 7. Overall, the model explains a significant amount (6.9%) of the variation in fear (F(4,335) = 6.23; p < .001).

Turning first to the direct effects of the predictors of fear, we see that the sociodemographic composite has a significant path coefficient (−.18), as does vulnerability (.15). The direct effects of crime and community networks are not significant. No significant mediating path coefficients are observed. Therefore, the indirect victimization model in the prediction of fear is able to offer little more than a specification, under the concept of vulnerability, of

TABLE 4

INDIRECT VICTIMIZATION MODEL PREDICTING FEAR

	SOCIO-DEMOGRAPHICS	VULNERABILITY	CRIME	COMMUNITY NETWORKS: FRIENDS & RELATIVES	FEAR
	(IVSDW2C)	(VULNW2C)	(FCRIME2)	(FCOMNET3)	(FWORRY2)
IVSDW2C	1.0	−.249 (−.249)	−.026 (−.026)	.086 (.083)	−.222 (−.221)
VULNW2C		1.0	.007 (.007)	−.034 (−.021)	.192 (.191)
FCRIME2			1.0	.035 (−.002)	.084 (.087)
FCOMNET3				1.0	−.089 (−.087)
FWORRY2					1.0

NOTE: Original correlations, and those reproduced by model (in parentheses). Crime dimension used is concerned with rapes and auto thefts. IVSDWC and VULNW2C are composite variables. IVSDW2C = .17 (number of adults in household) − .29 (renter status). VULNW2C = .26 (female) + .04 (non-white) − .04 (income). Gender and race were not deviation scored.

some of the sociodemographic correlates of fear. Other demographics not tied to the concept of vulnerability, such as household size and rental status, have a slightly larger impact on fear.
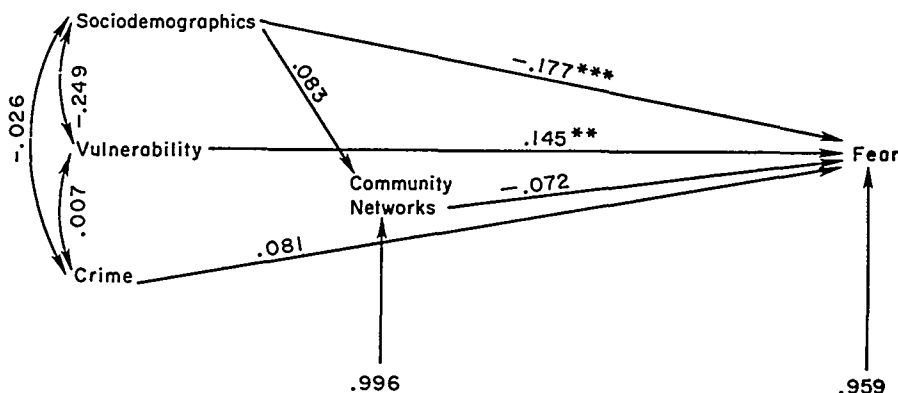

FIGURE 7

INDIRECT VICTIMIZATION MODEL PREDICTING FEAR

The results provide an interesting contrast to the results of the indirect victimization model predicting worry. In the analysis of

worry, vulnerability was not relevant to the outcome, although social networks were relevant. We obtained the opposite pattern of results in the fear analysis. Vulnerability was relevant in the fear analysis; social networks were not.

2.   *Disorder Model*

The zero order correlations for the disorder model appear in Table 5. Two composite variables are included. The sociodemographic composite includes four items: number of adults in the household (b = −.14; beta = −.13; p < .05), non-renter status (b = −.24; beta = −.11; p < .05), being male (b = −.23; beta = −.14; p < .01), and high income (b = −.03; beta = −.09; p < .05).[56] A problems composite includes physical (beta = .11; p < .01) and social nuisance problems (beta = .17; p < .001).

TABLE 5
SIGNS OF DISORDER MODEL PREDICTING FEAR

	SOCIO-DEMOGRAPHICS (SDW2C)	CRIME (FCRIME2)	LIVE ON NBHD. BOUNDARY (V48DEV)	PERCEIVED PROBLEMS (PROBSW2C)	FEAR (FWORRY2)
SDW2C	1.0	−.006 (−.006)	−.107 (−.107)	−.124 (−.124)	−.285 (−.284)
FCRIME2		1.0	.066 (.060)	.019 (.005)	.084 (.081)
V48DEV			1.0	.083 (.083)	(.090 (.047)
PROBSW2C				1.0	.199 (.196)
FWORRY2					1.0

NOTE: Original correlations, and those reproduced by model (in parentheses). SDW2C and PROBSW2C are composite variables. SDW2C = .14 (number of adults in household) − .24 (renter status) − .23 (female) + .03 (income). PROBSW2C = .11 (physical problems) + .17 (social nuisance problems). Crime dimension used is concerned with rapes and auto thefts.

The results of the full model appear in Figure 8. Overall, the model explains a significant amount (10.6%) of fear (F(4,332) = 9.86; p < .001).

The sociodemographic composite has the largest direct impact

[56] Variables included under the vulnerability concept in the indirect victimization model are included here under sociodemographics because this model and the community concern model do not use the vulnerability concept. Thus, all sociodemographics are treated as part of one cluster of variables.
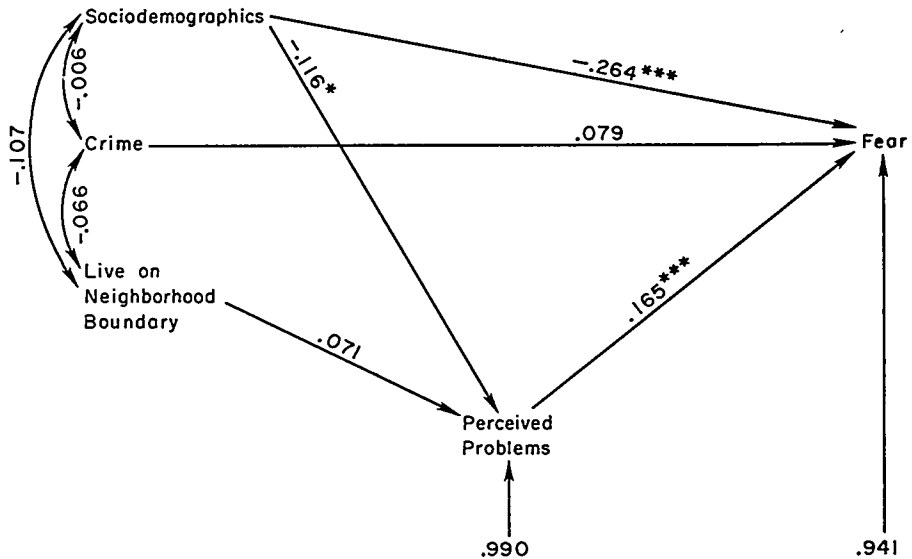
FIGURE 8
TRIMMED SIGNS OF DISORDER MODEL PREDICTING FEAR

(-.26) on fear. This path coefficient represents 93% of its total causal effect. Although still sizable and significant, the problems composite has a smaller direct effect (.17). Witnessed crime has a nonsignificant impact on fear (.08).

The level of perceived problems is determined in part by social class and demographic factors. Fewer problems are perceived by people in households with more adults, by people in owner-occupied households, and by males. Neither crime nor living on the neighborhood boundary is significantly associated with the perception of problems. Therefore, the central tenet of the disorder model is upheld: perceived problems contribute to fear. Objective conditions of disorder, however, neither contribute to fear nor to the perception of disorder, as the model anticipates.

Results with the Fear scale partially replicate the results predicting the Worry scale. In both analyses, perceived disorders are strongly tied to fear indices. What determines perceived disorder or problems, aside from social class factors, is less clear. Neither analysis linked objective measures of incivilities to perceived disorder.

3. Community Concern Model

The zero order correlations for the community concern model

appear in Table 6. The sociodemographic and problem composites are the same as those in the disorder model. The model also includes a community concern composite which contains both the "going downhill" dimension (beta = .2; p < .01) and the "negative comparison" dimension (beta = .13; p < .05).

TABLE 6
COMMUNITY CONCERN MODEL PREDICTING FEAR

	CRIME (FCRIME2)	LIVE ON NBHD. BOUNDARY (V48DEV)	PERCEIVED PROBLEMS (PROBSW2C)	COMMUNITY CONCERN (CMCNW2C)	FEAR (FWORRY2)
SDW2C	−.006 (−.006)	−.107 (−.107)	−.124 (−.124)	−.242 (−.243)	−.285 (−.287)
FCRIME2	1.0	.066 (.066)	.019 (.006)	.122 (.117)	.084 (.083)
V48DEV		1.0	.083 (.083)	−.022 (−.006)	.090 (.101)
PROBSW2C			1.0	.366 (.364)	.199 (.194)
CMCNW2C				1.0	.257 (.243)
FWORRY2					1.0

NOTE: Original correlations, and those reproduced by model (in parentheses). SDW2C, PROBSW2C, and CMCNW2C are composite variables. See TABLE 5 for a description of SDW2C and PROBSW2C. CMCNW2C = .21 (neighborhood going downhill + .13 (area dangerous, plan on moving).

The results of the path model predicting fear appear in Figure 9. Overall, the model explains a significant amount (11.8%) of the variation in fear (F(5,229) = 6.11; p < .001).

Sociodemographics, consisting of households with fewer adults, rental households, and women, all of which have higher fear levels, (−.23), and community concern, (.16), have significant direct impacts on fear. Crime and living on the neighborhood boundary, the objective incivilities measures used, have nonsignificant impacts.

Sociodemographics, crime and problems have sizable indirect effects on fear through community concern. Approximately 12% of the total causal effect of sociodemographics, 24% of the total causal impact of crime, and 33% of the total causal effect of problems are routed through concern. This is exactly what the model proposed. Both witnessed crime and perceived problems significantly exacerbate levels of concern. In short, the path analysis validates two central proposals of the community concern model: crime and
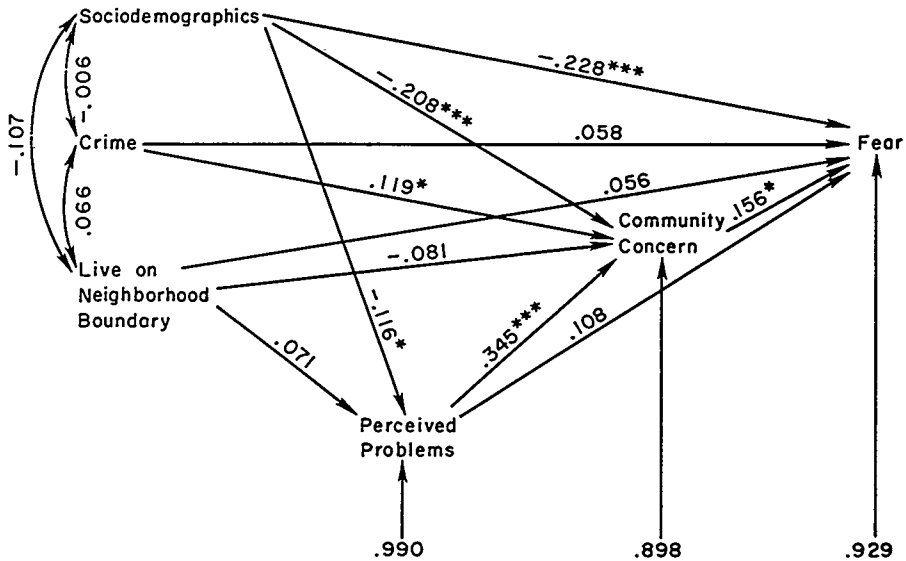
FIGURE 9
COMMUNITY CONCERN MODEL PREDICTING FEAR

problems feed community concern which in turn elevates fear levels.

The results differ somewhat from those predicting the Worry scale. In that analysis concern was not linked directly to the outcome as it is in the analysis of the Fear scale. Thus, the link of concern to the fear of crime is somewhat specific to the aspect of fear of crime examined. Both tests of the community concern model, however, make a firm connection between perception of local disorders and heightened community concern.

4. *Summing Up the Prediction of the Fear Scale*

In contrast to the consistency across models in predicting the Worry scale, the models vary in predicting the Fear scale, with adjusted R^2 ranging from 6% to 12%. The community concern model predicts the best; the disorder model predicts slightly less well; the indirect victimization model predicts least well.

Another difference in the models' abilities to predict Fear or Worry outcomes is that sociodemographics consistently exhibit the strongest direct effects in predicting fear, while aspects of local involvement (social networks) and perceptions consistently have the largest direct effects in predicting worry. This finding suggests that the more visceral, emotionally-laden component of fear reflects in-

dividual characteristics and household structure more than attitudes and behaviors linking the person to his or her immediate locale. This is not to say that involvement in or perceptions of the neighborhood are of no importance in the models predicting Fear, but relative to sociodemographics, these social and psychological processes appear less important.

C. OVERALL COMPARISON OF DIRECT EFFECTS

Table 7 provides some summary statistics regarding the direct effects of different classes of predictors. We concentrate on three types of predictors: sociodemographics, crime, and the central mediating construct in a particular model. Because indirect effects usually were relatively small in comparison to the total causal impacts, the direct effects capture the bulk of various predictors' total causal impacts.

The table tells a simple tale. Sociodemographic variables (e.g., gender, income, rental status) are most important in predicting the two dimensions of fear of crime (Worry and Fear). Across all models and both outcomes, sociodemographic variables explain, on average, 3.6% of the variance.[57] The key mediating variables identified by each of the models are the next strongest class of predictors. On average, they explain 2.1% of the outcome variance. In the models predicting the Worry scale these variables have the strongest average direct effect. In the models predictinq the Fear index they have the second strongest average direct effect. The crime variables are third in strength. On average, they explain .6% of the outcome variance and, for both outcomes, rank third (out of three classes of predictors) in the strength of their direct effects.

D. GOODNESS OF FIT

Throughout, we have included in the tables the correlations re-

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[57] One reviewer has suggested that the sociodemographic variables outperform the mediating and crime classes of predictors due to their lower measurement error. We readily grant that crime, based on police reports or witnessed crime, and reports of attitudes and behaviors have more measurement error than do reports based on demographic characteristics such as age, sex, and household size. Nonetheless, if the reviewer's suggestion were correct, the sociodemographics should have contributed the strongest direct effects in the analyses predicting the Worry scale *and* the Fear scale. They did not. In the models predicting worry, variables based on survey responses provided larger direct effects in two out of three cases. Further, if the reviewer's suggestion were correct, land-use measures, based on *censuses of all parcels on all study blocks*, should have performed strongly. They did not. We therefore believe that it is incorrect to assume that the rank ordering of different classes of predictors, in terms of the size of their direct effects, is simply or largely a reflection of differential measurement error across the different types of predictors.

TABLE 7
SUMMARY ANALYSIS OF DIRECT EFFECTS

MODEL VARIABLE	WORRY Beta	Rank	FEAR Beta	Rank
INDIRECT VICTIMIZATION				
Sociodemographics	.16	2	.17	1
Crime	.10	3	.08	2
Prime Mediator	.24	1	.07	3
SIGNS OF DISORDER				
Sociodemographics	.15	2	.26	1
Crime	.07	3	.08	3
Prime Mediator	.24	1	.17	2
COMMUNITY CONCERN				
Sociodemographics	.15	1	.23	1
Crime	.07	2	.06	3
Prime Mediator	.00	3	.16	2
AVERAGE				
Sociodemographics	.15		.22	
Crime	.08		.08	
Prime Mediator	.16		.13	

NOTE: For the Indirect Victimization model, Community Networks was the prime mediating variable. Absolute values are reported for betas. Vulnerability is treated as a sociodemographic concept in the Indirect Victimization model.

produced by the path models. For all models, all reproduced correlations were within .05 of the original correlations. Our path analyses have thus confirmed that all of these models show a good fit with the data. Theoretically, this is important. This confirmation does not mean that these three models are the only ones which can accurately model the data, but these models successfully capture the intercorrelations between the key concepts. Thus, none of the three models can be rejected out of hand simply because of a lack of goodness of fit. There are, of course, other parameters by which to evaluate these models.

V. CONCLUSIONS

We have formulated three related but distinct perspectives which explain individual-level fear of crime—indirect victimization, disorder, and community concern—into testable causal models. In order for these models to be testable they have been presented in their most essential form. We have identified two independent

dimensions of fear of crime: a visceral response to possible physical harm or confrontation; and a less emotional, more anxiety-related dimension. These two independent dimensions allow us to not only test but also to attempt to replicate the performance of each of the three models. We controlled for between-neighborhood sources of variation and examined covariation based on individuals and their immediate surroundings.

Several important points have emerged from our results. First, all of the models were successful in predicting significant portions of outcome variance and were successful at "fitting the data." Although some may consider the amount of outcome variation explained to be meagre, one must bear in mind that the models tested are "stripped down," as is necessary for an early stage of rigorous theory construction. Additionally, the sources of between-neighborhood covariation which can often "boost" results have been eliminated.

A second point that emerged is that none of the models were "perfect." The results did not support all the key hypotheses of any model in predicting both outcome dimensions. Rather, the following pattern emerged. In the indirect victimization model, social networks were relevant in predicting the Worry or anxiety dimension of fear of crime but were not relevant in predicting the more visceral Fear dimension. The measure of vulnerability was not relevant in predicting the Worry index but was relevant in predicting the Fear index. Thus, only one of the two tests (outcomes) supported each of the two key hypotheses of the indirect victimization model.

With the disorder model, perceived problems were linked to both fear scales. In both cases this linkage was strong. Thus, controlling for social class, land uses related to incivilities, and crime, perceptions of neighborhood problems are linked with fear of crime. This strong, replicated linkage supports Garofalo and Laub's notion that fear of crime is closely connected with a more general "urban unease."[58] This linkage is the first time this notion has been supported in an analysis that controls for between-neighborhood sources of variation in fear. Essentially, those who are more bothered by local social and physical problems are more fearful regardless of the qualities of the locale.

The sources of these perceived problems, however, are still unclear. In neither test were objective measures of land uses pertinent to incivilities (vacant houses, vacant lots, nonresidential land use, larger-volume arteries) related to perceived problems once social

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[58] *See* Garofalo & Laub, *supra* note 13.

class and crime were controlled.[59] In the test with the Worry dimension, crime was linked to perceived problems, but this connection did not reoccur in tests with the Fear dimension. The unclear origins of perceived problems suggest that, at this level of analysis, these measures are capturing a largely subjective, idiographic appraisal of local conditions. If this is the case, and only further careful replications of what has been observed here will tell us if this is so, reappraisals should be made of the results of previous studies of fear of crime where perceived problems were interpreted as more or less veridical reports of neighborhood conditions and dynamics.[60] An important task for those working within the "perception of disorder" approach to fear of crime is to clarify the origins of these perceptions. Such information will have important implications for the ongoing discussion concerning the construct validity of fear of crime.

In the community concern model, concern was linked with fear of crime using the Fear index, but the two were not linked when the Worry index was examined. This suggests that present and future distress about the neighborhood feeds the more visceral aspect of fear of crime but not the less pressing, more anxiety-related aspects. Perhaps the relevance of community concern to fear is more specific than has heretofore been suggested. This model produced good results in indicating what gives rise to community concern. With both outcome dimensions we saw that the perception of local problems engendered community concern. In the model predicting the Worry index, crime also contributed to community concern.

Aside from these points specific to the particular models tested, the present pattern of results suggests some more general conclu-

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[59] Again, these measures came from complete land-use files of all parcels on all study blocks. It is therefore acceptable to describe these measures as "objective," because measurement error was low to nonexistent in these files.   One reviewer has suggested that this conclusion (objective conditions not linked to fear) is incorrect and that we have committed what is widely known as the "partialling fallacy." The reviewer suggested that we cannot deny a link between neighborhood conditions and the perception of neighborhood problems while controlling for social class, because social class variation gives rise to *both* the conditions and the perceptions. We think the reviewer's line of reasoning is correct *at the neighborhood or ecological level of analysis.* Our analysis here, however, is on individual-level variations in perceived problems and fear and the contributions to these variations of census-block-level exogenous conditions. At such a micro-ecological level it is much more difficult to make the same argument. One would have to assert that the social class of the individual resident largely determines conditions on the census block. The role of social class factors in determining both exogenous conditions and perceptions of conditions is undoubtedly much weaker at this micro-ecological level than it is at the ecological level.

[60] *See, e.g.,* W. SKOGAN & M. MAXFIELD, *supra* note 7; Taylor, Taub & Dunham, *supra* note 22.

sions. First, fear of crime at the individual level appears to be largely a function of the individual's position in the larger society. Social class and demographic characteristics have emerged as the strongest predictors of fear responses. Some of the variables included under sociodemographics, such as being female, relate to Skogan and Maxfield's concept of physical vulnerability.[61] Some of the other variables that have been included—lower income and rental status—relate to Skogan and Maxfield's concept of social vulnerability. A question that has previously been open is whether characteristics indicative of social vulnerability are correlated with fear because of where those socially vulnerable persons live or because of who they are. The results here, which control for between neighborhood sources of fear and block crime rates, suggest that the latter is more tenable. Social vulnerability correlates with fear partially because those characteristics of individuals, regardless of where they are living, are associated with certain perceptions and sentiments that are more fear-inspiring. It seems important for researchers to probe for the dynamics underlying the connection of social vulnerability to fear of crime. Characteristics of the previous habitats of the socially vulnerable and expectations based on prior residential settings may provide an answer.

Nonetheless, the performance of sociodemographic predictors should not obscure the consistent role played by residents' perceptions of local conditions and by involvement in locale. These factors reflect person-environment transactions and inform us about the congruence, or lack of congruence, between the resident and his or her immediate environment.[62] Community concern, for example, most clearly reflects such a lack of congruence. Thus, although fear, as argued above, is a reflection of relative position in the social order, it is also an indication of a presence or lack of congruence between individuals and where they live.

Finally, the results underscore the loose linkage between crime and fear. Crime rates and actual street crimes witnessed were available as crime measures. Crime was weaker as a predictor of fear of crime than perceptions of locale and sociodemographics.[63] This

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61 W. SKOGAN & M. MAXFIELD, *supra* note 7.

62 For a discussion of congruence from a sociological perspective, see W. MICHELSON, MAN IN HIS URBAN ENVIRONMENT (1970). For a discussion from an environmental psychological perspective, see Stokols, *Introduction*, in PERSPECTIVES ON BEHAVIOR AND ENVIRONMENT (D. Stokols ed. 1977).

63 Clearly, the measures of crime used in this study were not perfect. Police reports undercount actual crimes, the extent depending upon the actual crime involved. Respondents' recall of crimes witnessed was also probably less than perfect. Nonetheless, the measurement qualities of the items were certainly not noticeably inferior compared

pattern of results, coupled with the unclear origins of local perceptions (e.g., of disorder) and sentiments (e.g., community concern) that inspire fear, suggests that a more fruitful avenue for future research may involve pursuing links between fear and issues such as neighborhood change, rather than attempting to build a stronger case for the link between crime and fear.

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to the qualities of the other classes of predictors used. Consequently, it would be incorrect to attribute the poor performance of crime predictors in this study, *relative* to other classes of predictors, to the measurement properties of the crime variables.