INFORMAL CONTROL IN THE URBAN RESIDENTIAL ENVIRONMENT

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Abstract

The purpose of the present study was to understand the block-level and individual-level determinants of crime, fear, and problems in the urban residential environment. Predictors of interest included physical, social, and territorial variables. A revised defensible space model was developed. It predicted that crime, fear, and problems would be lower in locations where defensible space features were more extensive, local social networks were stronger, and residents were more territorial. These hypotheses were tested using surveys, physical assessments, projective tests, police information, and behavioral observations. The data were collected between June 1979 and August 1980 in a stratified sample of 12 neighborhoods in Baltimore City. Regression and path analyses confirmed the hypothesized model. They also confirmed two important hypothesized mediating or indirect effects: defensible space features and local social networks dampened crime-related outcomes _via_ a strengthening of territorial functioning. Results of projective tests confirmed that residents expected defensible space features to exhibit the influence hypothesized by the model. Behavioral observation data and data from projective tests indicated that residents view co-residents more positively in low-crime than in high crime neighborhoods. Results were discussed in the context of developing more accurate models to better reflect processes of resident-based control.

INTRODUCTION

This study is concerned with the quality of the urban residential environment. Major detractors from that quality include crime, fear of crime, and related social problems. It is these particular issues which are the focus of our investigation. We sought a broad conceptual understanding of the derivations of these problems, and we identified three "clusters" of explanatory variables which we felt may prove useful: those related to defensible space theory, those related to social network theory, and those related to human territoriality. These clusters emerged from (respectively) the disciplines of planning, sociology, and psychology.

A. An Opportunity Reduction Approach: Where Does Crime Occur?

These three classes of predictors are similar in that they describe features of the residential environment which may increase or decrease opportunities for the occurrence of crime and problems. None, however, directly address the issue of what causes crime.

Traditionally, there has been a distinction between two types of criminological research: that which focuses on the causes of crime, and that which focuses on where crime occurs, or the opportunities that make criminal activity more likely to occur in some places than in others. Research on the causes of crime may be conducted at the individual level, and may even follow criminals or potential criminals for a period of time (e.g., Wolfgang, Figlio and Sellin, 1972). Analyses may also be conducted at the aggregate level, (e.g., Brenner's (1978) work on relations between the economy and crime rates).

Work on the occurrence of opportunities for crime has also had a long and distinguished history, dating back to Shaw and McKay's (1942) early work on areal variation in delinquency rates, or Lander's (1954) subsequent work correlating ecological factors with delinquency rates. [Much of this ecological work on delinquency is summarized by Gordon (1968).] Although there are many problems with such ecological analyses (Michelson, 1970), they can be useful in helping to pinpoint where crime may be more or less of a problem (e.g., Roncek, 1980). Information of this sort may be quite useful in problems of resource allocation, the identifiction of groups at risk, or in other elements of crime management. Historically in criminological and sociological work there has been a bifurcation between studies on the causes of crime and studies on the occurrence of opportunities for crime. The two types of studies provide very different types of information. Both types of inquiry are legitimate, and both have provided considerable useful information.

By looking at areal variations in crime rates and noting differences among places that have different crime rates, we may be able to identify factors that constitute opportunities for crime. If these are eliminated, we might expect a concomitant reduction in crime in that location. Three criticisms can be leveled against such an opportunity reduction strategy: (1) opportunities per se are not that important as a crime related-factor, (2) the criminal will just go elsewhere, and (3) opportunity reduction does not address the causes of crime.

The argument that opportunities do not play an important role in the occurrence of crime is at variance with a considerable amount of evidence. First, carelessness does play a role in crime. For example, a recent National Crime Survey blames an increase in larcency on people's failure to lock their doors and windows. This suggests that if people were more cautious, there would be less crime, and interviews with offenders themselves indicate that they do attend to features which make a crime more or less easy to commit. For example, Yin (1978) found that burglars would be less likely to "hit" a house if it was directly visible from across the street. He also recounts one situation where a couple of youthful offenders were prompted to commit a robbery because the conditions were extremely favorable (e.g., dark area, few people around, etc.)

The present report reviews a series of research studies which find that crime occurs less in some locations than in others; in part because environmental elements discourage the occurrence of crime (e.g., Waller and Okihiro, 1978; Pablant and Baxter, 1975). Thus, it is clear that opportunities are relevant to the occurrence of crimes, and that variation in some crime rates is associated with variation in opportunities to commit crime. Understanding the role of opportunities is therefore important.

Critics of an opportunity reduction strategy suggest that it may simply serve to displace crime, changing the targets of robbers or burglars from one area to another. In contrast to this criticism, however, the evidence suggests that displacement will not necessarily occur as a consequence of opportunity reduction. Fowler, McCalla and Mangione (1979) found no evidence to indicate that a crime reduction program implemented in one neighborhood resulted in more crime in adjacent locations. And Frisbie (1977) has examined data which suggests that by and large, burglars do not travel far to commit their crimes. On the average, the distance is less than one-half mile. Such travel habits could reduce the likelihood, at least for burglars, that significant displacement would occur as a result of opportunity reduction. Thus, changing opportunities for crime may well result in a real reduction in crime.

The third criticism is that by reducing the opportunities for crime, or in researching these opportunities, we are not really tackling the causes of crime. These critics usually think of unemployment, moral decay, family breakdown, or lack of earning power as potential major "causes" of crime. Such reasoning is evident in Merton's (1957) explanation of deviance or Cloward and Ohlin's (1960) theory of delinquency. These sociological theories about the causes of crime may well be correct, and we have no doubt that societal structure and change is causally related to crime rates in the aggregate. This does not preclude, however, an examination of the role of opportunities in crime. Nor does it preclude or cast doubt on the task of pinpointing the factors that explain why, socioeconomic considerations aside, more crime occurs in some places than in others. Furthermore, most of us are not in a position to do anything about the sociological causes of crime. Many of us are, however, in a very good position to do something about reducing crime on our block, or in our neighborhood. Finally, despite more than 30 years of theoretical and empirical work on the causes of crime, crime rates continue to escalate. For these reasons, then, this report gives serious attention to understanding how the occurrence of crime is patterned.

B. A Comment on The Three Types of Predictors

As mentioned above, our interests center around three types of predictors, each of which is associated with a particular theory: defensible space, social networks, and human territoriality. Clearly, these three concept areas do not encompass all of the factors that may increase or reduce opportunities for crime in the residential environment. Each of these clusters of predictors, however, is associated with a particular theory, and each has received previous--and in some cases extensive-empirical attention. Finally, and perhaps most importantly, support for each of these theories has been mixed. That is, the actual contribution of variables in each of these clusters to resident-based control had not been firmly established. The major purpose of our research was to provide as strict a test as possible, within a cross-sectional framework, of the utility of defensible space, social networks, and territorial attitudes and behaviors for explaining variation in crime-related outcomes.

As described in our report each of these clusters of predictors does contribute to an understanding of the problems of interest. Defensible space features, social networks, and territorial attitudes and behaviors were all significantly associated with crime-related outcomes. Wherever possible, these tests were carried out while controlling for socioeconomic variation, thereby making these tests "conservative" in a statistical sense.

Although we expected each of our three clusters of predictors to prove useful, that they actually did prove themselves is extremely important. This positive outcome, in one sense, justifies the broad range of community crime prevention, and crime prevention through environmental design (CPTED) research and demonstration activities that have been carried out in the past decade or so. Our results suggest that these previous efforts were using concepts which appear basically valid. Further, since these concepts appear in some instances to be very powerful predictors, they deserve continued attention and conceptual development.

The complex inter-relations among defensible space, social networks, and territorial functioning also deserve further detailed attention. Our results have revealed considerable interdependencies among these three clusters of concepts. Some of the linkages found were anticipated, and others were not. Connections between the three clusters of concepts are numerous and often quite strong. This pattern of results suggests that if a wholistic picture of the residential environment can be developed--one which encompasses the interplay between physical, social, and territorial elements--the resulting picture will be much more useful in guiding resident-based crime prevention strategies than the somewhat more fragmented picture that we now have.

In sum then, our results are both a capstone and a lodestar. They provide very strong evidence that concepts such as defensible space, social networks, and territorial functioning are each useful for explaining variation in crime-related outcomes. However, results also raise questions about how each of these concepts operate and relate to the other two, thereby suggesting avenues of future inquiry.

C. Comment on Terminology

Throughout the text we will be referring to clusters of predictors or outcomes by particular names. It is appropriate at this point to define the terms we will be using. Informal control refers to processes, attitudes, or elements that may foster or enhance the amount of influence that residents may exert over others, or over events, without reliance on formal agents of control such as the police or community organizations. Thus, the three clusters of predictors in our study--defensible space features, local social ties or local social networks, and territorial functioning--all are components of informal control. Defensible space features are those physical elements in the environment, usually of a fixed nature, which serve to delineate particular spaces, or to facilitate residents' jurisdiction over a space. Local social ties refer to attitudes and behaviors which describe residents' attitudes and behaviors toward co-residents on the same block. Territorial functioning refers to attitudes and behaviors reflecting control over, expectations about, or familiarity with, various delimited spaces in the environment.

On the outcome side we have three clusters of variables: crime, fear, and problems. We consider all of these to be crime-related outcomes, and sometimes will refer to them as such. We consider fear and problems to be crime-related because, over time, they may lead to, or result from, crime itself, even though their correlation (at one point in time) with crime may be low. We also expect that fear and problems may be consequences of the same community-level processes that cause crime. Thus, we feel justified in referring in general to our three clusters of outcomes as crime-related outcomes.

D. Organization

The report is organized as follows. Chapters 1 through 4 are preliminary. Chapter 1 is a literature review focusing largely on the role of physical features in the residential environment as they relate to crime-related outcomes. Chapter 2 briefly discusses some of the statistical and theoretical problems of grouped data. Researchers in the residential environment are most often confronted by this type of data, and it is problematic in several respects. Chapter 3 outlines the scope and nature of our various data collection efforts. Chapter 4 provides a statement of our conceptual model, which includes the major hypotheses we propose to test.

Chapters 5 and 6 contain the empirical centerpiece of the report. In

Chapter 5 we test our conceptual framework using hierarchical step-wise regressions. These simply tell us whether or not certain clusters of predictors are relevant to the outcomes being examined. In Chapter 6 we provide a finer-grained assessment of our model through the use of recursive path analysis.

Chapters 7 through 11 provide additional empirical tests of various links in the major model. Chapter 7 assesses the individual-level impact of local social ties on territorial attitudes. Chapter 8 reports residents' assessments of defenisble space features and territorial markers, based on abstract picture stimuli. Chapter 9 details the results of our behavioral observation analyses, and relates this information to survey data. Chapter 10 explores various aspects of physical features in the environment. Chapter 11 provides an empirical examination of the determinants of neighborhood identification.

Chapters 12 through 14 investigate various conceptual sidelights which are of some relevance to the major model under discussion. In Chapter 12 we discuss the roles of the physical environment. In Chapter 13 we consider the issue of objective and perceived homogeneity. In Chapter 14 we develop a general "step-heuristic," which is a loose conceptual framework that may be of use in investigating resident-based control across a range of environments.

Finally, in Chapter 15 we perform an integrative review of our findings, and in Chapter 16 we discuss the research and policy implications of our results.

E. A Comment on Alpha Levels

Even after such a brief introduction to the matter of this report, the reader may have an inkling of the broad array of results which are presented. Furthermore he/she may be troubled by the legion of statistical tests which we perform, fearing redundancy and a concomitant elevation of alpha (significance) levels. We suggest to such a reader that he/she consider Chapter 5 and 6 as the only places where we definitely test hypotheses, and that he regard Chapters 7 through 11 as purely exploratory. Thus, if the latter set of empirical chapters are treated as exploratory it is justifiable to go "fishing" for results without regard for the inflation of alpha levels. In short: in Chapters 5 and 6 we control alpha levels, and in the subsequent empirical chapters we waive our concern about inflated alpha levels because the latter analyses are exploratory in nature.

F. Other Products

We should add that there are some items which do not appear here, but may be found elsewhere. First, an extensive discussion of bivariate relationships, based on Survey I data, can be found in our 136-page manuscript (including 62 tables), "Toward a Resident-Based Model of Community Crime Prevention: Urban Territoriality, Social Networks, and Design" (Taylor, R. B., Gottfredson, S. D., Brower, S., Drain, W., and Dockett, K. JSAS Catalog of Selected Documents in Psychology, 1980, 10, p. 39, MS. 2044). That manuscript provides an in-depth analysis of item-to-item relationships, multivariate analyses of relationships within clusters of variables, and stratification checks. Second, a more thorough discussion of our procedure for identifying neighborhoods can be found in "Toward a Neighborhood-Based Data File: A Map of Baltimore Neighborhoods" (Taylor, R. B., Brower, S., and Drain, W. Occasional Paper. Center for Metropolitan Planning and Research, Johns Hopkins University, Baltimore, Maryland, October, 1979).

G. A Plea

We hope that readers who find this report interesting, useful, provocative or even practical will not hesitate to share their concerns and ideas with us.

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Our first and foremost debt is to the neighborhood leaders, block leaders, and residents in various areas of Baltimore who allowed us to intrude into their lives with our questions, picture-taking, and our behavioral recording. Their patience was exemplary, and their comments to us were often thought-provoking. Our most fervent hope is that these results, and the practical outcomes they may spawn, will at least recompense a portion of our debt.

A second sizable debt is owed Major Harwood Burritt, Lieutenant H. H. Mills, and Sergeant Emory Starry of the Research and Development Section of the Baltimore City Police Department. Without their assistance our study would have been merely of the perception of crime and therefore much less useful. For the endless piles of printout promptly and cheerfully supplied, we are indebted.

Throughout the course of the project staff of the National Institute of Justice--Fred Heinzelmann, Richard Titus, and Allan Wallis--have been a source of collegial as well as pecuniary support. Their unflagging interest in our project, and their valuable suggestions and comments have contributed in no small way to the quality of our efforts.

Another group whose help was quintessential to the timely completion of our effort was the Baltimore City Department of Planning. Willam Smith and all the district planners allowed us to pick their brains unmercifully about Baltimore neighborhoods, and, later on, contributed considerably to the development of our site-level scales. Without their help we would still probably be trying to construct our sampling frame.

Various colleagues in advisory capacities prodded us, pointed us forward, and criticized us constructively along the way. They include Hank Becker, Matt Crenson, Kathleen Dockett, Noel Dunivant, Karen Franck, Jack Fowler, Doug Frisbie, Allen Goodman, David Haines, Hal Proshansky, Amos Rapoport, and Lois Verbrugge.

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Last but most certainly not least, our legion of coworkers deserve mention as a crew who really outdid themselves. Our programmers--Mark Keintz, Shahir Kassam, Rachel Talalay, and Patty Nevin--suffered along with us through our moments of statistical agony. Our secretarial help--Verna Cavey, Suzanne McKibbin, and Armanda Wierzalis plodded through innumerable drafts of manuscripts and piles of terror-inspiring tables. And, our associates and

assistants, directed by Whit Drain, observed, photographed, rated, edited, coded, and keypunched till the cows did come home.

Of course, while the virtues of this product should be attributed to those who aided us, the mistakes, flaws, and other drawbacks are solely the province of the authors.

CHAPTER I

THE DEFENSIBILITY OF DEFENSIBLE SPACE
A THEORETICAL AND EMPIRICAL REVIEW: [1]

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Introduction

This paper assesses defensible space theory and research. Conceptual problems with statements of the theory, and methodological problems with the research, are examined. For ease of presentation the bulk of defensible space theory and research is divided into first- and second-generation efforts. In first-generation efforts almost no conceptual attention is given to social predictor or mediating variables. In second-generation efforts the conceptual focus includes several social variables.[2] The difference between these two phases is largely one of emphasis. Although a study that we assign "first-generation" status is sometimes more limited in scope than a "second-generation" study, we do not wish to imply that the first-generation efforts should necessarily be considered less mature, or developmentally inferior.

The theory and research of each generation are presented and critically reviewed. This assessment leads to some rather sobering conclusions: defensible space theory contains several untested, and in some cases erroneous, assumptions; and most research has failed to fully test the theory. Nonetheless, it is clear that defensible space theory is in an uniquely advantageous position to help derive solutions to a host of urban residential ills.

We close with a discussion of some current trends in defensible space theorizing. It appears that this area is becoming increasingly diffuse, spawning new individual-level, psychological models, as well as more aggregate-level, planning models. Of course, there are still gaps in the theorizing, leaving many questions unanswered and the research lags far behind the conceptual development. Nonetheless, defensible space theory will in all likelihood continue to provide a useful framework for the assessment and analysis of urban residential ills.

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[1] Portions of an earlier version of this paper were presented at the annual meeting of the American Society of Criminology, Philadelphia, November, 1979. We are indebted to Karen Franck for detailed and helpful comments on an earlier draft. Remarks from Tet Motoyama and Herb Rubenstein were also appreciated. A somewhat different version of this chapter appeared in T. Hirschi and M. Gottfredson (Eds.) Understanding Crime: Theory and Fact in Contemporary Criminology. Beverly Hills: Sage, 1980.

[2] Others (cf. Mayhew, 1979) have also noted a shift, at least in the theory, over time.

First-Generation Defensible Space Theory and Research

A. Theory

Defensible space theory was originated by planners. Jane Jacobs (1961) suggested that to reduce urban residential crime: (a) building should be oriented toward the street, thereby encouraging natural surveillance and the "eyes on the street"; (b) public and private domains should be clearly distinguished; and (c) outdoor spaces would be safer if placed in proximity to intensively used areas. Jacobs' ideas were based solely on personal observation and anecdotes. Newman later elaborated these ideas into defensible space theory, which premiered in his books Defensible Space: Crime Prevention Through Urban Design (Newman, 1973a) and Architectural Design for Crime Prevention (Newman, 1973b).[3,4] The theory evolved out of Newman's experience, from the mid -60's on, with crime-ridden,high-rise public housing projects. His original defensible space model suggested that physical design changes could "release latent attitudes in tenants which allow them to assume behavior necessary to the protection of their rights and property" (Newman, 1973b, p. xii). These behaviors included "a significant policing function, natural to their daily routine and activities" which would "act as important constraints against antisocial behavior" (Newman, 1973b, p. xii). In short, he proposed that design features could encourage territorial attitudes and behaviors on the part of the residents, and that these, in turn, would reduce unwanted intrusions and other criminal behaviors. Graphically, Newman's original model may be portrayed as follows:

$$\text{Design Features} \xrightarrow{(+)} \text{Territorial Attitudes and Behaviors} \xrightarrow{(-)} \text{Crime and Anti-Social Behavior}$$

The author felt that the focus on design as a key predictor variable was justified: "Our work over the past two years...has led us to conclude that the form of the static components of our living environment is, in and of itself, a factor which significantly affects crime rates" (Newman, 1973b, p. xii). He proposed four major design ingredients (Newman, 1973a, p. 9; 1973b, p. xv): (a) through the use of real and symbolic barriers subdividing the residential environment into manageable zones which will "encourage tenants to assume territorial attitudes and prerogatives" (Newman, 1973b, p. xv); (b) providing opportunities for residential surveillance; (c) designing sites so that the occupants are not perceived as stigmatized or vulnerable; and (d) placing residential structures in proximity to safe or non-threatening areas.

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[3] Defensible space is not only a theory of residential design and crime, it is also a range of mechanisms for environmental control, and the resulting safe environment (Newman, 1973a, p. 3). The focus of this paper is largely on defensible space as a theory.

[4] Waller and Okihiro (1978) have argued that Newman's ideas do not qualify as a theory, but should instead be treated as a heuristic. Nonetheless, Newman does discuss several variables and the relationship between them. This discussion therefore qualifies as a model, which is an early stage of theory development. Thus, we refer to defensible space theory.

Although the design-based remedies for problems are very clearly elaborated, the original statement of the model contains some assumptions that are less clearly stated, but deserve to be brought into the open. First, design features are treated as predictors of paramount importance, and receive more attention than any other elements. Second, it is posited that territorial attitudes and behaviors play a critical role in mediating the ultimate impact of design on unwanted intrusions and other antisocial behaviors. Third, design is conceptualized as a releaser or disinhibitor of territorial attitudes and behaviors. Finally, it is assumed that the territorial instinct is latent but strong in all residents. This hydraulic, universal view of territoriality has been suggested by Ardrey (1966) and others. The difficulties with these assumptions are discussed below.

The context in which the defensible space theory was developed helps explain its popularity. In the mid-60's crime in public housing projects, and in other urban residential areas, was rising dramatically. Many residential environments had been designed without regard to considerations of residential safety. Newman's model is in part compelling because it raised the prospect that a major social problem can be largely solved through straightforward and specific design solutions.

B. Research

Newman (1973a) presents a variety of evidence designed to test his model. The empirical studies use archival data on crime in housing projects, which was available from local New York City housing authority. According to the author the most dramatic empirical support of the theory comes from a comparison of two adjacent housing projects, one which has defensible space characteristics (Brownsville), and one which does not (Van Dyke). Newman suggests[5] that the badly designed project has a higher total number of crime incidents, and higher maintenance costs. He comments that these differences cannot "be explained away by variations in tenant characteristics in the two projects" (1973a, p. 49).

To also test the model Newman performed statistical analyses on physical and social characteristics affecting location and frequency of crime in 133 New York City housing projects. The author concludes "The overall results of the analyses of variance coupled with the trend analysis and the regressions, is that relationships between physical design features and crime patterns have been established" (1973a, p. 234). In support of this conclusion he cites, for example, an analysis of variance result which indicated that crime was more frequent in taller buildings. The author also cites some regression results which support the above stated conclusion. It is interesting to note that the best predictor of the criterion variable (rate of indoor robberies) is a social variable (percent families on welfare, $R^2 = .21$), and that subsequent physical predictors, in comparison, add smaller increments in variance explained. ($R^2 = .16$). Also, as the author indicates, there is multicollinearity within groups of predictors in the data, but we don't know how this problem is dealt with.

[5] Newman's (1973a) Tables 6 and 7.

Defensible space theory was also tested in a study conducted by the Institute for Community Design Analysis under Newman's direction (Kohn, Franck, and Fox, 1975). The basic format of the study involved making several physical modifications to promote defensible space at two public housing projects (Clason Point and Markham Gardens), then (1) conducting before/after measures at these sites and (2) making comparisons between the modified projects and physically similar but unmodified projects (Cherry Hill and Barry Farms). The unmodified projects were quite dissimilar from the modified projects on social characteristics (racial and economic characteristics of residents, percent welfare families; see Table 4, Institute for Community Design Analysis, 1974). The modifications at Clason Point and Markham Gardens involved such changes as lighting on paths, fences around yards, wider walks and raising curbing, and establishing play areas.

Results suggested that the modifications did not have a clear-cut effect on mediating territorial behaviors such as gardening and planting, but rather that these behaviors were annual events that about half the sample in each project engaged in. Also, improvements by residents of outdoor spaces beyond the yards was higher in the unmodified projects. Cross-project (i.e., modified vs. unmodified) differences in safety, neighboring activities, and self-reported victimization were observed. The authors did note a reduction in fear of crime at Clason Point, subsequent to the modifications.

The behavioral crime-related outcomes of modifications to the projects were not extremely clear-cut. For example, at Clason Point the installation of street lights was concurrent with (1) a <u>de</u>crease in crimes between 5 and 9 p.m., (2) an <u>in</u>crease in crimes between midnight and 5 a.m., and (3) an <u>in</u>crease in total crime. Thus, it appears that the defensible space modifications were not completely successful in deterring crime, as hoped.

Several other first-generation studies have also been carried out. In most of these studies the researchers simply attempt to link design features to crime-related outcomes. In some cases, additional areal-level social predictors are examined. For the most part, these studies do not measure any mediating territorial attitudes or behaviors. We discuss these below.

Bevis and Nutter (1978) conducted block- and tract-level analyses of the relationship between types of street layout, and residential burglary rate. They found that inaccessible street layouts, particularly dead end, cul-de-sac, and L-type blocks, were associated with low rates of residential burglary, and that this association could not be explained by traditional social variables. While this study does clearly establish a link between environmental design and crime rate, given the limited range of variables measured it is unclear if the results support or contravene defensible space theory. One could argue that they support the theory: inaccessible street layouts make the area a more manageable, better demarcated zone for residents to exert territorial control over, and this, in turn, reduced crime.[6] On the other hand, one could argue there is less auto and pedestrian traffic on inaccessible streets, therefore less surveillance and use; according to the theory that there should be <u>more</u> burglary, not less. We feel it is probably best to refrain from interpreting this study as either supporting or detracting from defensible space theory.[7]

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[6] Compare Appleyard's (1976) results on street traffic.

Pablant and Baxter (1975) explored the relationship between school vandalism and environmental attributes. The study is notable in that the impact of adjoining neighborhood features was also considered. In addition, schools were chosen that varied on vandalism rate but were similar in terms of other social variables. The results provided some support, and some refutation, of defensible space theory. As would be predicted by defensible space theory, schools in neighborhoods with better surveillance opportunities and higher activity patterns had lower vandalism rates. However, in contrast to defensible space predictions, schools with better lighting and fences did not experience a lower vandalism rate. One of the strongest findings of the study was that schools that were well-maintained, and aesthetically looked-after, experienced low rates of vandalism.

Mawby (1977) in his investigation of public and private housing projects found that high-rise projects did not exhibit higher offense rates than low-rise projects. He notes "Newman's theory gains no support from the data" (Mawby, 1977, p. 173). As in Pablant and Baxter (1975), however, surveillance opportunities were important for crimes against property. Mawby observed that crimes against business property were less likely in areas where there were more potential witnesses.

Brown (1979) investigated the relationship between territorial "cues," and the occurrence or non-occurrence of residential burglary. The cues assessed included real and symbolic barriers, surveillance opportunities, and traces of resident uses. The physical features examined explained 16% of the variation in the outcome variable, and surveillance opportunities (neighboring houses visible) was the strongest predictor variable. This study, like the others, does establish a link, albeit modest, between design and crime.

Tien, O'Donnell, Barnett and Mirchandani (1979) evaluated a large number of projects that improved street lighting in the hopes of reducing crime. The data did not clearly indicate that improved lighting reduced or deterred crime. (Unfortunately, due to a variety of methodological problems, the authors were not able to conclude that there was no relationship either). Limited evidence suggested that improved lighting may reduce fear of crime.

Wilson (1978) examined the relationship between areal social characteristics, defensible space features, and vandalism in London housing projects. She found that the best and most consistent predictor of vandalism was the level of child density: higher densities meant more property damage. In low child density locations, however, physical defensible space features were linked with vandalism rates. The author concludes (p. 60) "this study gave some limited support to Newman's contentions."

In another study of English housing projects (Department of the Environment, 1977; cited in Clarke, 1979), social residential composition, and level of caretaking and maintenance, were found to be the best predictors of vandalism rates. Modest associations between defensible space features and vandalism rates were revealed.

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[7] Frisbie (1977) interprets the study as supporting defensible space theory.

In an examination of telephone booth vandalism, Mayhew, Clarke, Burrow, Hough and Winchester (1979), found that the strongest predictor of abuse was tenure type: booths with more public housing nearby were more vandalized. Controlling for tenure type, booths with higher surveillance opportunities, i.e., that were overlooked by more nearby windows, were less vandalized.

In sum, this latter group of studies reveals a consistent albeit modest linkage between design features, particularly surveillance opportunities, and crime-related outcomes. Studies that include social predictors find that these often outperform the physical predictors.

C. An Appraisal of the Theory and Research

At this point, we discuss what we perceive to be problematic in first generation theory and research. In Newman's initial statement of the theory territorial behavior is treated in a loose, almost metaphorical fashion. He suggests that territorial behavior and attitudes are universally latent in all residents, and can be released by design features. Newman's treatment of territoriality would seem to be problematic on three counts. First, he fails to clearly define what he means by territoriality, and this has made for considerable confusion (Hillier, 1973). Others have followed his example and treated territoriality in a fairly cavalier fashion (Gardiner, 1978). Second, recent research on human territoriality has indicated that it is inappropriate to think of human territoriality as an undifferentiated instinct, (cf. Ardrey, 1966). Rather, human territoriality is a series of goal-directed, spatially dependent behaviors and attitudes, which operates at various levels of social organization, and fosters several different aspects of interpersonal functioning (Suttles, 1972; Sundstrom, 1977; Edney, 1976; Taylor, 1978). Third, recent research (e.g., Scheflen, 1971; Suttles, 1968) has indicated that territorial behaviors and attitudes vary widely across different subcultural groups. Thus, the impact of design on territoriality is likely to vary widely across these groups. Newman seems to be suggesting that particular design solutions will be equally effective, and have the same type of impact, in all manner of different social and cultural groups or subgroups.

Furthermore, in the initial statement of the theory design is the main predictor variable. Newman suggests that it is the design strategies that serve as the prime mover, and induce the attitudes and behaviors that will lead ultimately to reduced crime. While such a focus is parsimonious, it would seem overly restrictive. Research has revealed a rich range of determinants of informal social control processes (Wellman and Leighton, 1979).

Finally, Newman's theory contains several behavioral assumptions which may be unwarranted (Mawby, 1977). For example, he assumes that residents are willing to exercise a policing function, and thus would take advantage of surveillance opportunities to actually survey and control local spaces. Assumptions such as these deserve to be directly tested.

When we move to a broader conjoint consideration of the theory and the research, we note a substantial conceptual slippage between the theory, as stated by Newman, and reported research. The author postulates territorial behaviors and attitudes as crucial variables which mediate the impact of design on crime-related outcomes. However, these intervening variables are not measured in the research; their relationship with the predictors and outcomes is simply not assessed. Thus, we don't know if the effects of these predictor variables operate via the mediating territorial variables. (It may also be the case, of course, that the predictor variables interact with the territorial variables, in which case the inclusion of the latter would result in more explained outcome variance.) In short, Newman's data (1973a) simply does not serve as a test of the theory. This problem is also evident in the other first-generation studies, not conducted by Newman, which simply assess the link between design and crime-related outcomes. Thus, many of these studies, authors' statements notwithstanding, do not serve as even limited tests of defensible space theory.

Kohn et al. (1975) did assess the mediating variables of territorial behaviors and cognitions, as well as crime-related outcomes, in different arenas. There is still considerable slippage, however, in terms of the spatial domain of the mediating and outcome variables. If crimes were reported in a particular location the authors did not attempt to uncover what territorial behaviors were going on in that space, or what territorial cognitions residents held toward that space. Thus it is not clear whether the critical mediating variables, territorial behaviors and attitudes, actually covaried with crime-related outcomes. Such findings are needed if defensible space is to be critically tested.

When we focus solely on the methodological quality of first-generation defensible space research, three types of problems, two concerned with quasi-experimental design, and one concerned with analytical techniques, are apparent.

Newman's first-reported research (1973a), and Kohn et al. (1975), both focus on several projects simultaneously. The idea is that if different projects, with varying physical designs, have different crime rates, then the latter can be explained in terms of the former. The logic of this analysis breaks down unless we are assured that except for design, the different projects are equal. If the projects differ on other variables besides design then the variation in crime rates may be attributed to these other variables.

As noted above, Newman's most dramatic "proof" of defensible space projects comes from his comparison of two adjacent projects (Brownsville and Van Dyke) (Newman, 1973a). Although he suggests that the two projects are equal on tenant characteristics, his tables suggest that the people moving into each are dissimilar, with twice as many people with no assets moving into Van Dyke as moving into Brownsville (Hillier, 1973).[8] Thus, the noted crime and maintenance differences can perhaps be explained in terms of self-selection. In addition, the profile of people moving into each project may be determined in part by the reputation of each site (Mawby, 1977).

The same problem of interpreting cross-project differences occurs in Kohn et al. (1975). They observed differences between modified and unmodified projects, as noted above, on neighboring activities, safety ratings, and self-reported victimization. Unfortunately, these outcomes may be explained by other variables besides the presence or absence of defensible space modifications.

[8] Newman's (1973a) Table B3 (Appendix B).

The unmodified projects appear quite different from the modified in terms of tenant racial and social composition. In addition, the crime rate in the neighborhoods surrounding the various projects may have also been different. In short, the cross-project differences observed could as easily be explained by social variations as by physical variations.

A second problem is that many of these studies use a "modification blitz" approach: i.e., several physical features of the environment are changed at the same time (e.g., Kohn et al.). This makes the interpretation of results problematic. If crime-related outcomes go down, you don't know which features are responsible. If crime-related outcomes do not go down, it is possible that the crime-reducing effects of one feature were cancelled out by the crime-promoting effects of another feature.

Moving to a discussion of analysis problems, these are most apparent in Newman's original work. Since this has not been a recurrent problem in this area, we will not spend considerable time on it. Patterson (1977) covers this ground in greater detail. Suffice it to say that the two techniques Newman applied, analysis of variance and multiple regression, were inappropriate for the data they were applied to. Analysis of variance was applied to one variable, building height, even though height was strongly correlated with a number of other design variables (e.g., facing street, number of contiguous projects).[9] Since these other variables were not controlled for, it is unclear how much of the outcome variation may be due to them. Multiple regression was applied to data in which there were some strong intercorrelations between predictors. In such a situation regression may yield unreliable increments in R^2 for each variable, and individual β weights are unlikely to cross-validate (Gordon, 1968).

D. Summing Up on First Generation

In sum, first-generation research has established a link between defensible space design features, particularly surveillance opportunities, and crime-related outcomes. However, this relationship is often overshadowed by links between social variables and crime-related outcomes. The vast majority of studies has failed to assess territorial attitudes and behaviors, which are critical mediators of the impact of design. The theory itself suffers on two counts: a misunderstanding and misapplication of human territoriality, and excessive attention to design predictors, at the expense of social predictors.

Second-Generation Defensible Space Theory and Research

E. Theory

Second-generation defensible space theory is characterized by increased attention to social predictors and mediators. Also, the conceptual implications of various resident and areal characteristics are more fully explored. Residents are important on two counts: as control or policing agents in their own right, and as individuals whose support is needed for the successful implementation of defensible space modifications.

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[9] Newman's (1973a) Table A6.

The clearest statement of second-generation theory is found in Newman (1975, p. 4): "Defensible space is a term used to describe a residential environment whose physical characteristics...function to allow inhabitants themselves to become the key agents in ensuring their own security," (emphasis added). Thus, the inhabitants' behavior is now "key." As before, the theory suggests that design can "release the latent sense of territoriality and community among inhabitants" (Newman, 1975, p. 4). Newman asserts that the social variables critical for fostering territoriality are (1) reducing the number of people who share a claim to a space (Newman, 1975, p. 55) and (2) grouping residents by uniformity in age and life style (Newman, 1975, p. 74).

The concept of crime prevention through environmental design (CPTED), developed by researchers at Westinghouse (1976, 1977a, 1977b; Lavrakas, Normoyle, and Wagener, 1978) also fits into second-generation defensible space theory. CPTED suggests that in making defensible space alterations it is extremely important to have the support of the local residents and community groups in order that these changes will be viewed in a positive light. Second, CPTED realizes it is important to provide management which will be able to assist residents in the selection and installation of target hardening devices, and in making other defensible space changes. Also, the desirability of implementing social defensible space strategies (e.g., improving the neighborhoods' image, encouraging social interaction by residents to promote cohesion and control, increasing community crime prevention awareness, etc.) is noted. They recommend implementing these social and physical changes at the site, block and neighborhood levels.

F. The Research

CPTED concepts were implemented by Westinghouse at three demonstration sites: a residential neighborhood, a commercial corridor, and a school. At each site local input was received for planning the defensible space modifications. Social modifications (e.g., the organization of local crime-watch groups) were also implemented concurrently. In this paper we discuss the results from the commercial corridor evaluation.

The commercial corridor CPTED project in Portland used a variety of physical (e.g., target hardening, more lighting, change traffic patterns) and social (e.g, improve citizen and police response, development of local associations, etc.) strategies. Several "hard" outcomes such as residential burglary, commercial burglary, street crime, and commercial robbery, were also assessed.

The evaluation revealed the following pattern of results. The CPTED strategies had little effect on mediating variables, or proximate outcomes, such as pedestrian behavior, perception of risk, social cohesion, or personalization (Lavrakas, Normoyle and Wagener, 1978). The CPTED strategies did reduce commercial burglaries: time-series analysis indicated that there were fewer burglaries after the CPTED commercial security surveys were carried out (Lavrakas, Normoyle and Szoc, 1978). (A slight but significant decrease in residential burglaries was also noted after the commerical surveys, although it it difficult to see how these events are related.) Other "hard" outcomes were not affected by the CPTED strategies.

A CPTED demonstration project was implemented in Hartford. The project sought to implement physical and social defensible space modifications at the neighborhood level. An evaluation of this demonstration project has recently been completed by Fowler, McCalla, and Mangione (1979). They reported that when police, resident-based and physical CPTED strategies were all employed concurrently in a Hartford neighborhood, residential burglaries decreased dramatically, and residents' perception of risk was also somewhat reduced.[10] In addition, the mediating changes which a defensible space theorist would expect, were also apparent. For example, more residents reported walking in the neighborhood daily, and residents reported that it was easier to recognize outsiders. However, the degree to which these mediating variables actually covaried by locale (e.g., block) with the crime-related outcomes, was not assessed.

A recent attempt to make a comprehensive assessment of defensible space theory is reported by Newman and Franck (1980). Residents in public housing in three cities were surveyed. The predictor variables of interest included physical, social, and managerial factors. The outcomes of interest included crime, fear of crime, and instability (i.e., turnover). It was expected that one of the major linkages between the predictors and outcomes would be via mediating variables such as resident control and use of space, and resident interaction patterns. Using the site (n = 64) as the unit of analysis, a multi-stage causal model was applied to the data. The results supported the proposed model: i.e., strong direct effects of the predictors, and strong indirect effects of the predictors via the mediators, were found.

In a recent study of burglary in Toronto, Waller and Okihiro (1978) found that, in apartments, there was no relationship between territorial control over adjoining spaces, and the likelihood of being burglarized. They did find that levels of social cohesion differentiated burglarized <u>vs</u>. non-burglarized houses, but not apartments. They also found that burglarized houses were less surveillable than non-burglarized houses. These results suggest that the pattern of effective crime deterrence may be different for apartment and single-family sites.

G. <u>An Appraisal of the Theory and Research</u>

Second-generation defensible space theory seeks to incorporate social predictors, and in this respect represents a vast improvement over first-generation theory. However, except for Newman and Franck (1980), statements of the theory are vague on <u>what</u> aspects of the social environment interact with components of design. The nonspecific focus on social climate stands in stark contrast to the clear focus on the relevant components of the physical environment.

The criticisms noted above for first-generation theory's treatment of territoriality and sociocultural variation, apply also to second-generation theory. The CPTED authors in particular assume that a defensible space strategy which works in one sociocultural context will be equally effective elsewhere (Westinghouse, 1976, p. 2 - 10). This assumption is simply not tenable (Brower, 1980; Taylor and Stough, 1978).

[10] The authors do not appear to apply standard tests of statistical significance to these results.

In second-generation efforts there is still considerable slippage between the theory and research. In some studies where the mediating variables of interest were measured, the degree to which the mediating variables actually covaried by locale with the outcome variables, was not assessed (e.g., Fowler et al., 1979). Failure to assess the mediating-outcome link makes it difficult to appraise the theoretical implications of certain patterns of results. For example, Lavrakas, Normoyle and Wagener (1978) concluded that CPTED strategies had a successful impact on "ultimate" outcomes such as commercial burglary, but not on "proximal" or mediating outcomes such as personalization. Does this mean that the CPTED strategies had direct impacts on distal outcomes such as burglaries? Or, does it mean that CPTED strategies had small effects (i.e., nonsignificant) impacts on several mediating variables, but that these several effects combined to have a significant impact on distal outcomes such as crime? The answer is not clear.

In addition, in several studies the exact nature of the links between the predictor and mediating variables was only hazily spelled out. In a typical study (e.g., Lavrakas, Normoyle and Wagener, 1978) several predictors and several mediating processes were examined, and the relationships between specific variables across the two clusters of variables were only vaguely outlined. An important exception to this ambiguity is Newman and Franck (1980).

Several of the second-generation empirical investigations have been demonstration projects. Demonstration projects usually involve only one site, and are, in effect, single case studies, and subject to the limitations which are associated with this mode of inquiry. In a single site demonstration the quality of the site vis-a-vis other potential sites needs to be clearly spelled out, as do the criteria for selection.

In most of the second-generation demonstration projects several CPTED strategies have been implemented concurrently. For example, social organizational changes were implemented concurrently with policy changes and physical design changes (e.g., Lavrakas, Normoyle, and Wagener, 1978). As discussed above, this makes it difficult to assess results: if success occurs, which change is it due to; and, if failure occurs, i.e., no change, is it because one strategy was canceling the other out? An exception to this is the Hartford project (Fowler et al., 1979), where an attempt was made to phase in CPTED strategies successively. The evaluation indicated that the last strategy phased in, i.e., the physical change designed to personalize the streets, was pivotal in reducing crime-related outcomes. Of course, successive implementation is not independent implementation: we don't know if the physical changes would have been as effective if they were not preceded by social and policing changes. Nonetheless, this strategy of successive implementation is a vast improvement over earlier "blitz" approaches.

These criticisms should be tempered somewhat by an understanding of demonstration projects. Their purpose is to demonstrate results, given a theoretical perspective which is assumed true, in a single site. The planning of the program is built around this objective. Although an evaluation component is included, analysis is rarely as in-depth as with a research project.

A final method problem which deserves mention is confusion concerning the unit of analysis. Since crime, an outcome often of interest, is a rare event, researchers will often aggregate up to the block or neighborhood level, or, in the case of public housing, the site or project level. While this aggregation increases variance in the crime measure, it drastically reduces the n of cases in the analysis. The reduction of n prohibits the simultaneous testing of the influence of a large number of variables. A second problem is that these aggregated analyses tell us about aggregate-level relationships, and tell us nothing about what is happening at the individual level (Robinson, 1950). Aggregate-level results can be hard to interpret. Third, since individual variation around group means is discarded, the picture that emerges at the aggregate level is likely to be much stronger than any picture that emerges at the individual level. In short: over-confidence in the results may be inspired where it is not warranted. The only solution to these problems of aggregation, which are discussed more fully in Chapter 2, are clearer theoretical statements about which level of analysis is appropriate for predictors and outcomes. For example, while police activity may be understood as a block-level outcome, it probably makes more sense to interpret fear as as individual-level outcome. Future theorizing needs to attend more closely to issues of level of analysis.

Summing Up on Defensible Space to Date

Our review of the theory and evidence leads us to rather sobering conclusions. First, defensible space theorizing, its intuitive appeal notwithstanding, is in need of further clarification. The interplay between social and physical elements of the environment deserves further attention, as do issues of aggregation. The impact of varying sociocultural contexts also needs to be specifically addressed.[11]

The research to date has been somewhat limited. In many studies the critical mediating variables have not been measured, or have not been measured adequately. Furthermore, most of the research has been limited to housing projects, and investigations of more typical residential environments are few. Those studies, e.g., Waller and Okihiro (1978), that do assess different types of sites (houses vs. apartments), find a different pattern of results for each. In addition, it has not yet been determined if potential offenders perceive defensible space features.

Although defensible space theory is lacking, and research to date inconclusive, we do not feel that it is appropriate to "abandon the ship." Rather, we suggest that defensible space theory can be revised and tested, and that such an updated model may be of use in understanding crime-related outcomes in residential environments.

Toward Third-Generation Theory and Research[12]

Further evolution of defensible space theory and research is evident on several fronts. The territorial model presented in Chapter 4, and tested in Chapter 5 and 6, may be viewed as such evidence. Other advances are also apparent. In his most recent book, Community of Interest, Newman (1979)

[11] Our conclusions regarding defensible space theory and research are quite different from those of Rouse and Rubenstein (1978) who stated "(Newman's) works have been lauded for their theoretical discussion of physical-social phenomena" and "each of these (Newman's) research efforts conducted over the

proposes what we would categorize as a third generation model. This model is novel in several respects. Given the originality of this latest model, and given that it evolved out of the defensible space tradition reviewed here, we propose to consider it in this chapter.

Theoretically, Community of Interest is a direct extension of Newman's earlier defensible space work. In that earlier work he dealt primarily with security of shared spaces within public housing projects. In the present work he applies those same ideas to settings in which there are multiple ownerships. Thus, the work focuses clearly on the problems that prompted Newman's earlier theorizing.

The main thesis is that residents must take over the management of shared spaces if they wish to live in secure settings, and that this is best achieved by dividing residential areas into small geographic enclaves. "Community of interest is a concept for creating contemporary physical communities structured around the satisfaction of the shared needs of similar types of residents... Community of interest is a mechanism for the creation of intermediary zones between the private home and public street - zones which are the shared terrain of a small group of neighboring residents, which address their common interests and provide them with a form of collective identity" (Newman, 1979, pp. 16 - 17).

In order to ensure that suitable social conditions exist within each enclave, Newman has three key recommendations.

1. Each enclave should have not more than 30% of its population on welfare. The middle class element must predominate. This can be achieved through a quota system.

2. Each enclave should be homogeneous with respect to stage in the cycle. Elderly people, residents with children, and working adults should live in separate enclaves.

3. No enclave should be more than 30% black. This can be achieved by instituting a quota system.

These recommendations are a fusion of Newman's defensible space ideas with his views on national social goals. He favors urban communities with a fine-grained racial and economic mix, and feels that there is only one way to achieve this: each community must be composed of a patchwork of homogeneous enclaves. The typical suburban environment satisfies Newman's criteria for defensible space, but he finds the large scale economic and racial segregation that go with it to be socially unacceptable.

Thus, Newman is suggesting that physcial defensible space features are only effective when certain criteria are met; i.e., groupings exist which are homogeneous on several key dimensions, most notably age and stage of the life cycle. Through the imposition of racial and economic quotas communities can be stabilized, and middle-income people can be drawn back into the city. If these enclaves are safe, he suggests, people can be drawn back into the city.

[11] (Contd.)
past five years have contributed support for Newman's defensible space theories" (pp. 69, 70).

[12] This section was composed largely by the third author.

Having dealt with the social issues, Newman provides a detailed analysis of the defensible space characteristics of different housing types - rowhouses, walk-ups, mid- and high-rises. Choices of an appropriate building style is essential, the significant characteristic being the number of people who share an entry and the other collective spaces. Rowhouses and walk-ups come off best. High rises are hard to manage, and tenant selection is vital. Newman quotes figures to show that high rises have more crime, especially against persons, and that most of the crime happens in the shared spaces. Newman also discusses the placement of buildings and entrances following defensible space principles. There is a section on place for children to play, and the material on symbolic barriers acknowledges the importance of perception.

Newman draws empirical sustenance for his notions about enclaves from some recent studies of private streets in St. Louis, which are actually owned by the residents. These streets are predominantly middle-income streets located in the hearts of various low-income communities. Analyses indicated that these streets experienced lower levels of crimes against persons, than occurred on surrounding streets. Residents on the private streets experienced lower fear levels, although their fear was lower than was actually warranted by the existing crime rate.

<u>Community of Interest</u> is laudable on several counts. The author appreciates that both homogeneity and heterogeneity of residential groupings is desirable, and that to seek one at the cost of another may not be wise. In addition, in his theoretical discussion he pays much closer attention to the specifics of social composition of residential groupings, and how this may interact with design. Finally, he does provide explicit discussion of design guidelines, and this may be useful for planners, designers, and managers. Thus, on several counts, this work is an improvement over earlier work in the defensible space tradition.

On several theoretical counts, however, the work has serious shortcomings. First, the author assumes that by matching on age and stage of the life cycle, perceived homogeneity and use of public spaces will perforce evolve. This is patently a leap of faith. In the late fifties and early sixties planners extensively researched the virtues of homogeneity and heterogeneity. Gans (1968) reviews this work and suggests that it is desirable to have enough homogeneity so that conflicts between neighbors will be reduced, and positive local ties may develop. He also notes, "At the present time, no one knows how this solution could be defined operationally, that is, what mixture of specific characteristics would be likely to provide the kind of homogeneity suggested above," (p. 174). That is, no one knows <u>what it is</u> that makes a community homogeneous enough for resident-based control to evolve. Similarity on age and stage of the life cycle may, or may not, accomplish such an end.

Second, the author's model may just displace conflict from various streets, to the interstices between enclaves. He suggests that needed facilities along the boundaries would provide an attraction for persons from different enclaves, and they could thus meet amiably. Suttles' (1968) example of use patterns around boundary facilities such as Peanut Park suggests, however, that such amiable coming together is not likely to happen. Segregation at the boundaries between communities appears more likely. Thus, there is a very real potential for conflict along the seams between the proposed communities.

Third, the question of change in residential composition is not dealt with. As families age and develop, and residential turnover occurs, how will similarity be maintained? How will congruence between residents and building type be enforced? Will dissimilarity and a lack of congruence be allowed to develop, or will people be forced to move as they progress through the life cycle? Newman offers us a static picture, and offers no solution to the problem of development or turnover of residential groupings.

Finally, Newman's scheme requires an enormous social cost to be implemented. Families would be forced to move from where they presently are, and would only be allowed to live in particular enclaves. If a person or family wanted to move into a particular enclave, he/she could be denied based on quotas. Also, there must be some sort of bureaucracy to maintain the desired composition of these enclaves. It is unlikely that social costs such as these are likely to be cheerfully borne by the public in order to establish hypothetical communities that may not work.

A Look Ahead

Some important issues which must be resolved in future research are listed below, although not in order of importance:

1. What happens when offenders or potential offenders confront territorial residents, signs of appropriation, or other resident-based activities and environmental features which have a deterrent value? We know a lot about criminal behavior (e.g., Capone and Nichols, 1976), a lot about resident-based behaviors and the residential environment, but not much about the interface of the two. This issue has received only very passing attention (Brantingham and Brantingham, 1978), and needs to be explored.

2. Over time, how do offender behaviors affect territorial behaviors and attitudes? Does threat lead people to become more territorial (e.g., Brower, 1980), or less territorial, and does threat affect different people differently?

3. Is a policing function "natural" to residents? Will residents utilize defensible space features, or stand behind them, and if so, under what circumstances?

4. What is the cost effectiveness of defensible space as compared to other strategies such as environmental managers (Brower, Stough, Headley and Gray, 1976)? Waller and Okihiro (1978) suggest that defensible space modifications are costly, and Mayhew (1979) points out that they are irreversible. More thorough comparisons of the advantages and disadvantages of defensible space, *vis á vis* other strategies, are needed.

5. How, if at all, do defensible space processes operate in different types of environments (projects vs. apartments vs. single-family dwellings), and what relationships appear consistently in these different settings?

6. What are the relations among areal context, immediate environment, and individual-level territorial functioning? In the residential environment does the neighborhood determine block functioning, and is, in turn, individual functioning a simple mirror of block dynamics? Or does the process work in the opposite direction, in a "grassroots" fashion? What are the links between a person and his/her block climate, and how does this vary in different areas?

Crime, fear of crime, and social nuisances in the residential environment are socio-spatial phenomena. They result from a complex mix of factors. Many of these factors are nested in the local environment: residents' attitudes, use patterns, and interaction patterns; and the design of the environment. Defensible space theory, if carefully conceptualized and tested, is in a uniquely advantageous position to address these issues.

CHAPTER 2

PEOPLE ON A BLOCK IN A NEIGHBORHOOD: THEORETICAL AND STATISTICAL IMPLICATIONS OF GROUPED DATA[1]

Ralph B. Taylor

In the urban environment, residents are grouped onto blocks, which, in turn, are grouped into neighborhoods. Community crime prevention researchers and evaluators, as well as others who study the residential environment, often explore relationships at a particular level of aggregation (e.g., the block), as well as relationships between levels of aggregation (e.g., between individuals and blocks). Unfortunately, however, we don't know how people came to be grouped, in their present configuration, onto blocks, or how blocks came to be grouped into neighborhoods. Given this ambiguity, and given the effects of the process of aggregation on relationships, analysis of grouped data is fraught with hazards. Statistical care can reduce these problems. Ultimately, however, the successful treatment of grouped data is dependent upon the development of more carefully phrased theories. The rationale behind the treatment of the present data set is explained.

Introduction

This paper explores the theoretical and analytical implications of the use of grouped or nested data, in research and evaluation in the area of community crime prevention (CCP). Researchers in the area of CCP often deal with grouped (or nested) data because people live on particular blocks (which are different from each other), in particular neighborhoods (which are different from each other).[2] Often the CCP researcher or evaluator is interested in the behavioral/environmental dynamics of all three levels (individual, block, and neighborhood), or the dynamics between levels.

In our opinion the most important problems posed by grouped data are theoretical ones. Conceptually, the same variable, when aggregated up to say, the block level, becomes a very different theoretical construct from what it was at the individual level. And, the fact that people are "nested" at several

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[1] The author is indebted to Noel Dunivant who originally put us on the trail of some of these problems. Sidney Brower, Karen Franck, Allan Goodman, Stephen Gottfredson, and Patty Nevin provided very helpful and thought-provoking comments on earlier drafts of this chapter.

[2] In the public housing environment people live in buildings, which are different from each other; which are grouped into projects, which are different from each other.

different levels poses a problem for theory: what level of aggregation will a theory address itself to?, and, how will that theory deal with relationships between levels of aggregation? Ultimately, these issues call for careful theory as well as careful statistics.

In this chapter the nature of grouped data, and the theoretical and practical interests of grouped data for CCP will be addressed. This discussion leads to a statement of the problematic aspects of nested data for CCP, given the goals of CCP theory, research, and evaluation. We close with a statement of how we propose to deal with this issue in the present report.

The Environmental and Theoretical Context of Community Crime Prevention

In the urban residential environment, people live on blocks within neighborhoods.[3] In the terminology of the experimental design in psychology, people are nested (or grouped) within blocks, which in turn are nested within neighborhoods. Although residential segregation practices (Isaacs, 1948), economic resources, cultural patterns (Rapoport, 1977), and varying degrees of choice are involved, it is never entirely clear how these groupings come about, or evolve, over time. In different parts of an urban area (e.g., a low income neighborhood vs. a revitalizing neighborhood) the groupings may come about via radically different processes - an issue to which we shall return later. Furthermore, grouping occurs on a host of physical (i.e., housing) as well as social dimensions. It is clear, however, that we often see more homogeneity, in terms of residential characteristics, within groupings than across groupings.

The theoretical processes of interest to the CCP researcher, planner, or evaluator, may operate at any or several of those levels of grouping. We may be interested in intra-individual processes: what type of people have the highest fear level?; or what type of residents in a particular locale are most likely to be at risk? At this level there is, of course, no grouping, and the focus is entirely on intrapersonal processes.

At another level, the hypothetical CCP investigator may be interested in the interpersonal processes that are occurring among a certain group of people. For example, he may be interested in reducing fear through the development of stronger ties or better communication among neighbors.

Block-level processes are often of interest to us because a block-level focus helps to place particular outcomes of interest (e.g., burglary, police activity) within a clearly defined spatial arena. Clear localization in turn may help to pinpoint the features of the physical environment relevant to the outcomes of interest. Examples of block-level processes which may be of interest include the relations between block-watch programs, whistle-stop

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[3] In the suburban or rural setting, Warren (1963) suggests that the importance of neighborhood is declining. Nonetheless, in urban areas there has been strong and widespread recognizance of the importance of neighborhoods.

programs, or foot-patrols, and outcomes such as fear or street crime.

Proceeding further, the importance of the off-block context may also be of interest. Off-block contextual factors such as nearby bars or schools may be related to block-level problems such as litter or vandalism. The off-block context may be conceptualized in terms of specific amenities and their location (e.g., Frisbie's (1977) work on Moby Dick's bar) or through the use of neighborhood concepts.

Finally, we may be interested in neighborhood-level processes. We may want to know (for example) how crime is related to neighborhood decline, or how neighborhood-level organizing is related to crime, or how safe neighborhoods evolve in the midst of dangerous neighborhoods.

Having indicated how our interests may focus on any one level of grouped data, it is also important to point out that our theory, or planning or evaluation, may be directed at <u>cross-level</u> relationships. For example, we may wish to know if the location of charismatic, safety-conscious leaders on a block leads to local CCP groups, which in turn result in safer blocks. In this instance cross-level processes involving the intrapersonal, interpersonal, and block level are all involved. Or, we may wish to know how the occurrence of block-level cleanup and beautification groups leads to a slowing of neighborhood social disintegration, in different types of neighborhoods. Here, cross-level processes involving the block and the neighborhood are of interest.

While the likelihood of our interest in one or several levels of analysis is clear, what is less readily apparent is that as we move to higher levels of grouping, the data become more complex. For example, nested within block-level processes are intrapersonal and interpersonal processes. Table 1 illustrates the composite quality of grouped data at different levels.

Before leaving our discussion of the context of CCP data, two additional features deserve mention. On the positive side, it is clear what the meaningful areal units are--the block and the neighborhood. Urban sociology has confirmed the importance of these arenas to residents (e.g., Hunter and Suttles, 1972). On the negative side, however, some outcomes of interest to the CCP investigator (such as victimization) are rare events which require aggregation up to a certain level in order to obtain any variation.

Problematic Aspects of CCP Data for Analysis and Theory

In this section I wish to point out the implications of the nested data which may be of interest to the CCP investigator.

Let us pursue a hypothetical example. We have some data in hand from a survey. Three items are of interest: length of residence (X_1), number of friends on a block (X_2), and fear (Y_1). Respondents were 100 residents from 10 blocks, and 10 respondents/block. Now, let us also hypothesize that we are interested in fear as a block-level phenomenon, and stability as a block-level phenomenon, etc. In this case we would like to investigate the relationship between average length of residence on a block ($\overline{X}_1$), average number of friends on a block ($\overline{X}_2$), and average fear on a block ($\overline{Y}_1$), <u>across</u> the set of 10 blocks.

Table 1

Processes Nested Within Grouped Data at Various Levels

Data Level	Processes Operating	Example
1. Intrapersonal	Intrapersonal	Question about installation of locks.
2. Interpersonal	Intrapersonal Interpersonal	Question about how much one looks out for neighbor's house, when neighbor away.
3. Block-level	Intrapersonal Interpersonal Block-level	Proportion of people belonging to a block club
4. Neighborhood-level	Intrapersonal Interpersonal Block-level	Efficacy of CCP efforts of local neighborhood organization.

Note: Inter-block and inter-neighborhood data levels are not shown, although they could obviously be included.

Then, the block-level relationships of interest to us, as well as the individual-level relationships, are indicated in Figure 1. The dashed lines between the block and individual-level variables indicate a functional relationship (the block score is the average score of persons on the block) which is not of causal significance (Hannan, 1971a, 478). Consistency is also assumed, i.e., that each block-level variable is simply a mathematical transformation of its individual-level counterpart (Hannan, 1971a, 481). Stated differently: it is not assumed, for example, that block-level friendship patterns ($\overline{X}_2$) are a function of individual-level residence patterns (X_1), as well as a function of individual-level friendship patterns (X_2). Assume that we carry out some multiple regressions, thereby obtaining a total amount of explained variance in fear (R^2_{total}) as well as a b or beta weight for each predictor ($b_{1\ total}$, $b_{2\ total}$).

Unfortunately, these results are not as straightforward as they might seem at first. R^2_{total} is a composite of variance explained by between-block variation ($R^2_{between}$) and pooled within block residual variation ($R^2_{pooled\ within}$). The same holds true for each b or beta coefficient.

We might reply that that is no concern of ours; we are willing to live with the composite nature of R^2 and b's.

Regrettably, there's still a rub. Recall that we have 10 blocks in our sample. This small sample size means that the standard error in measurement of any between block effects ($R^2_{between}$, $b_{1\ between}$ $b_{2\ between}$) is likely to be large, and, thus, these measures are likely to be unreliable. [4] These unreliable measurements are part and parcel of any measures of total effects (R^2_{total}, $b_{1\ total}$ $b_{2\ total}$). Consequently, these measures of total effects are not as robust as they first seemed.

Leaving aside for the moment issues of CCP, I would like to discuss how this issue has been treated and discussed in the area of educational psychology. Considerable attention has been given to this problem by Cronbach (1976), from a regression framework, while Page (1974) has tackled the same issue from an analysis of variance perspective, and Knapp (1977) has dealt with simple correlations. Since we are interested in the causal sequence related to our variables, I pursue the regression perspective.

Educational psychologists often deal with nested data: pupils are located within classrooms, which are located within schools, which are located within school districts. In his discussion and exposition, Cronbach (1976) focuses particularly on the stream of research and evaluation concerned with Aptitude

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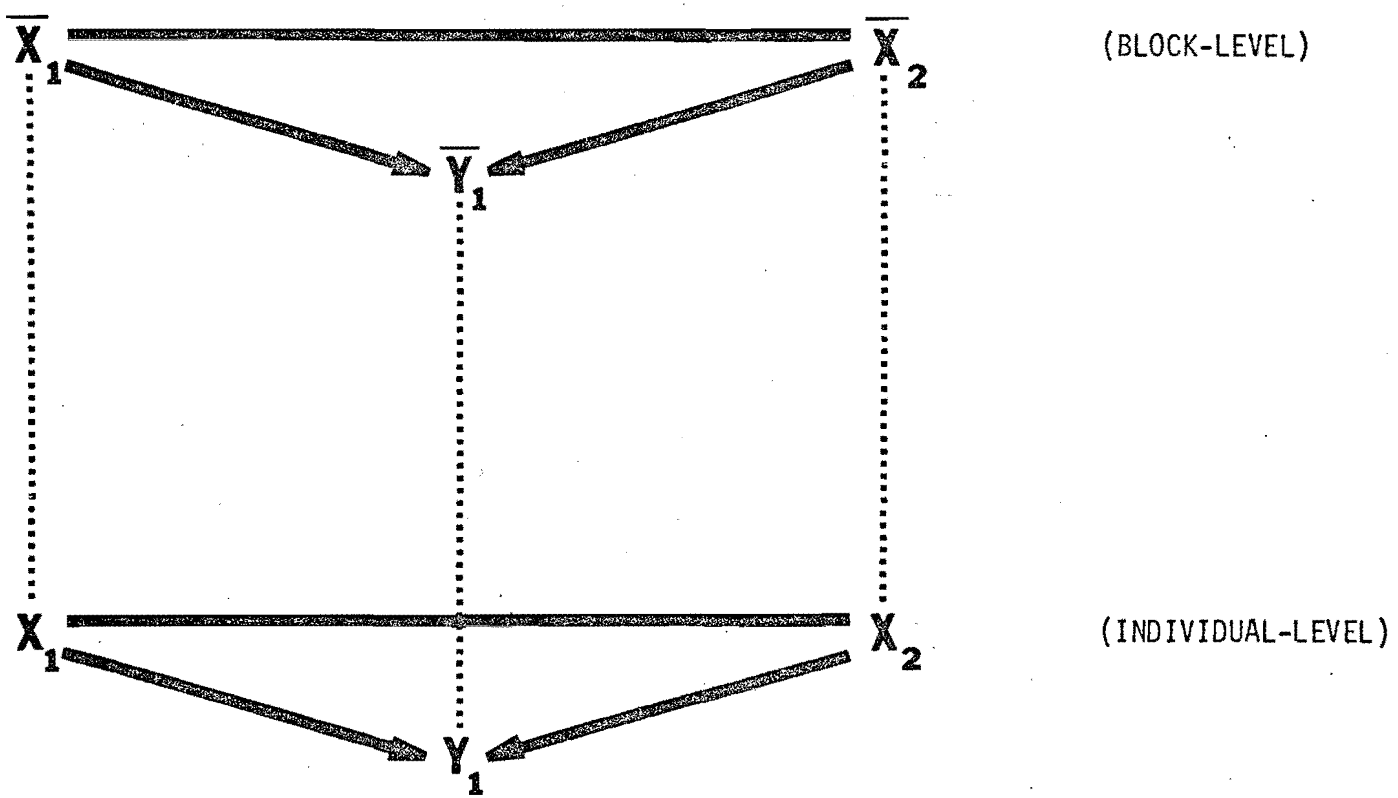
[4] Unreliable is meant here in a particular sense. We can obviously model these between block effects using, for example, analysis of covariance with dummy variables, and thus obtain coefficients to describe these between block effects. However, these coefficients, or the $R^2_{between}$, are not likely to be significantly different from zero. It is in this sense that they may be unreliable.

FIGURE 1

(adapted from Hannan, 1971a)



X Treatment Interactions (ATI). Typically, in these studies an innovation is introduced into some classrooms and not others. The question of interest is which students improve, and why. The problem comes in deciding upon the unit of analysis. Simply using class means on various aptitude measures loses the "richness" of the sample within classroom, and raises all the problems of aggregation bias discussed above. Simply using individuals as the unit of analysis loses sight of the classroom, and may result in an artificial inflation of degrees of freedom if the responses of individuals within a classroom are interdependent.[5] In addition, the individual as the unit of analysis results in R^2_{total} within which is lurking some unstable $R^2_{between}$. Furthermore, Cronbach points out that although a researcher may be tempted to "cover himself" by doing both a pupil-level and classroom-level analysis, this is theoretically inappropriate, and, indeed, each of these analyses is really assessing very different constructs, and asking very different questions.

As a partial solution, Cronbach suggests decomposing the classroom-level effects ($\overline{X}$), and the pooled within-classroom residual ($X-\overline{X}$). In a regression framework one can enter the between ($\overline{X}$) effects first, and the pooled within ($X-\overline{X}$) effects second. This is called "downward decomposition." Alternatively, one could enter the pooled-within effects first, and the between effects second. This is called "upward decomposition." Which choice one makes depends on the theory one is testing, and what one is hypothesizing. For the ATI research Cronbach favors downward decomposition: being in a particular classroom with particular resources sets the contexts for student achievement. Some sociologists who have been active in this area are in favor of upward decomposition, and the measuring of this will be discussed below when we deal with context effects.[6]

Lest the reader think we have abandoned the issue of CCP altogether, let us leave the classroom and return to the residential environment. Suppose that we have a treatment such as a neighborhood-level program to decrease resident fear, that half the blocks in the neighborhood are involved, and that the program involves whistle-stops and the provision of a special number to call for speedy response to emergencies. Assume that the researcher has carried out a regression analysis of the data resulting from the program, and that he used a downward decomposition approach. Therefore, relevant block means were the predictors entered on the first step ($\overline{X}_1$), and relevant individual deviation from block means ($X_1-\overline{X}_1$) were entered on the second step of the regression.

Unfortunately, such downward decomposition approach is only a partial solution. The pattern of effects yielded by decomposition, e.g., $b_{X_1\ within}$, $b_{X_1\ between}$, is contingent upon the particular process by which people came to

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[5]How to decide when interdependence is present among observations is actually very difficult. One may use statistical criteria, or theoretical criteria concerning the degree of "groupiness" or interaction among members.

[6]One may argue, from systems theory perspective, that individual-level and context-level influence are both occurring simultaneously, and that upward vs. downward composition is of no difference. Nonetheless, individual-level effects still have to be separated from context effects.

be grouped onto blocks or into neighborhoods. Unless there is a random assignment to groups (which is never the case in CCP) the results are specific to the particular way in which people were grouped. Thus, for example, the pattern of results yielded by a CCP evaluation in an inner city area where locational choice is minimal, and heterogeneity of block population is maximal, may not translate into a suburban locale where choice is greater and heterogeneity is less. Cronbach (1976, p. 2-25) admonishes us that "...evidence collected by observing individuals behaving in groups is not a dependable indication of what will happen in an individual experiment. Nor can evidence obtained in groups composed in one manner indicate what will happen when the groups are formed by a different procedure, unless a strong theory about the character of the context effects has already been worked out."

The problems in ATI research, and the proposed partial solution of decomposition have been explored in some detail because, I feel, this situation closely parallels the problems that may confront a CCP planner, researcher or evaluator.

What to Do?: The Approach Adopted in the Present Report

In sum, it is clear that grouped or nested data is problematic. It is also clear that: (1) there is no "perfect" methodological approach for dealing with grouped data, and (2) the method used for dealing with grouped data should flow from the theoretical approach that is brought to that same data.

In the present report we carried out our major analyses in the following manner. We conducted an analysis of our data at the block level. In addition we carried out separate analyses of pooled within-block residuals. The latter amounts to analyses of individual effects controlling for block-level effects. Our reasons for adopting such an analysis plan were as follows.

First, we felt that either upward or downward decomposition was inappropriate because we had no solid basis on which to causally order the variables at different levels of aggregation. Upward decomposition would assume that individual-level effects precede and in effect cause block-level processes. In short, it would assume that people generate block climates. In the territorial networks, defensible space, or CCP literature there are no theories or empirical studies which would support such an assumption. Downward decomposition would assume that the block that the people live on somehow conditions or modifies individual-level processes. It would assume that block-level effects are causally prior to individual-level effects. Although people may be drawn to live in certain types of blocks, there are no theories or data that would support the assumption behind downward decomposition.

By contrast, there is ample theory and data to support a block-level analysis. Interpreters of defensible space theory have suggested that the project building is the major level at which defensible space processes may operate (Newman and Franck, 1980). In the standard residential environment we felt that the face-block (two sides of a street) was the unit of analysis comparable to the project building. Furthermore, prior research in the residential environment (e.g., Brower and Williamson, 1974, Wandersman and

Giamartino, 1980) has suggested that the face block is a viable residential unit. Thus, we felt empirically and theoretically justified in doing an analysis of block-level means.

In addition, we concluded that it was important to carry out an analysis of individual-level effects, controlling for block-level effects. Several points led us to this decision. First, some of the theories which we have incorporated into our major model, such as human territoriality and social networks, are couched (predominantly) at the individual level. Second, we felt that individual-level models, if they could be verified, would help substantially in the later development of cross-level theories. Thus, the results might be of use in filling a conceptual void. Finally, the bulk of the research team was composed of psychologists. As such, we share an implicit faith that individual-level functioning <u>can</u> be modeled, and that it should not be treated as "error." Hence, our decision to carry out an individual-level analysis controlling for block effects.

CHAPTER 3

METHOD:

AN OUTLINE OF DATA COLLECTION EFFORTS[1]

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Sidney Brower

We outline the structure of our major data collection efforts. Neighborhood stratification, neighborhood sampling, and block sampling are described. Surveys I and II, and the accompanying assessments of site-level features, are discussed. Ancillary data collection efforts include behavioral observations and an abstract picture task. Two types of outcome data, police calls for service data, and police Part I crime data, are summarized. The virtues and drawbacks of a multimethod approach are reviewed.

Introduction

In this chapter we sketch out the data collection efforts that occurred during the course of the project. For specific details about any of these efforts the reader is referred to the appropriate chapters. Our desire here is not to provide exquisite detail, but rather to broadly outline the terrain so that relationships between different landmarks are clear.

Figure 1 provides a schematic outline of various efforts, and depicts interrelationships between components. We first review neighborhood and block sampling procedures. Then we outline the Survey I effort, and the assessment of site-level, physical features. Behavioral observations, which occurred on a subsample of Survey I blocks, and an abstract picture task which was completed by a subsample of Survey I respondents, are then reviewed. Then, we cover the purposes and nature of Survey II. We consider the various types of police data that we obtained. Finally, we discuss our multi-method approach.

Defining and Classifying Neighborhoods[2]

Our primary sampling unit was the neighborhood. Thus, our initial task was to define neighborhood units in Baltimore City. Since we wished to use the neighborhoods for sampling purposes, the neighborhoods we defined had to be exhaustive of the area (of Baltimore City), and mutually exclusive (i.e., no overlap between neighborhoods was permissible).

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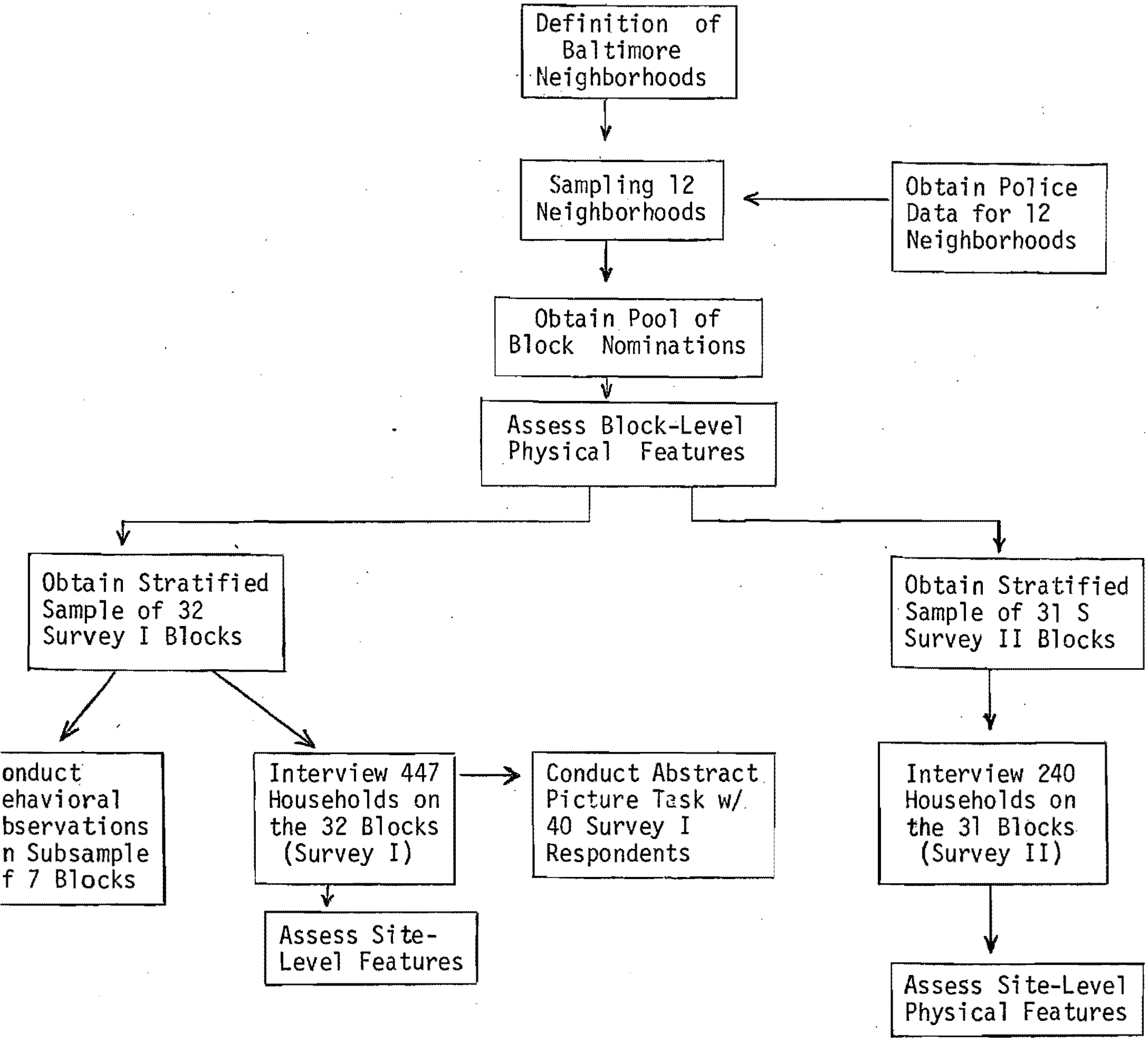
[1]Copies of surveys or other data collection instruments are available upon request, from the first author.

[2]For more detail regarding issues of neighborhood definition, classification, and sampling, the reader is referred to Taylor, Brower, and Drain (1979), and to Appendix A of this chapter.

Figure 1


Definition of Baltimore Neighborhoods
Sampling 12 Neighborhoods
Obtain Police Data for 12 Neighborhoods
Obtain Pool of Block Nominations
Assess Block-Level Physical Features
Obtain Stratified Sample of 32 Survey I Blocks
Obtain Stratified Sample of 31 S Survey II Blocks
onduct ehavioral bservations n Subsample f 7 Blocks
Interview 447 Households on the 32 Blocks (Survey I)
Conduct Abstract Picture Task w/ 40 Survey I Respondents
Interview 240 Households on the 31 Blocks (Survey II)
Assess Site-Level Features
Assess Site-Level Physical Features

Using data about existing community organizations in Baltimore City, and perceptions of Baltimore City district planners, neighborhoods in Baltimore were defined. The planners also rated these neighborhoods on an income dimension and a % rental dwelling units (% RDU) dimension. These ratings showed good interrater reliability, and good external validity.

Subsequent analyses of neighborhood characteristics, based on census data, indicated that Baltimore neighborhoods clustered into three types: low-income, predominantly rental (Type 1); mixed (Type 2); and medium-income, predominantly owner-occupied (Type 3). On income and % rental dimensions, the mixed neighborhoods were between the Type 1 and Type 3 neighborhoods. A stratification check was later carried out using Survey I data. The data revealed that the three types of neighborhoods differed as expected on the income and percent rental dimensions.

We sampled, with a probability proportional to size, from each neighborhood type. We double-sampled from the mixed neighborhoods because there were so many of them. Our final sample of 12 neighborhoods thus included 3 low-income, rental neighborhoods, 6 mixed neighborhoods, and 3 medium-income, homeowned neighborhoods.

Classifying and Selecting Blocks

After the selection of our twelve neighborhoods, contacts were made with leaders of each community. By and large, these neighborhood leaders were officers of local community organizations. In the initial meeting we explained the purpose of the study and asked the leader to nominate examples of two types of blocks: (1) those where people work together and watch out for each other (socially cohesive), and (2) those where people go their own way (socially non-cohesive). Most of the leaders were able to give us prompt nominations for blocks of both types. The leaders often gave us 4-5 nominations of each block type.

In the twelve neighborhoods a total of 96 socially organized and socially unorganized blocks were nominated. Another eight blocks of interest, either because of unique physical or social characteristics, were added to this pool for a total of 104 blocks.

In order to select blocks that were high and low on physical defensible space characteristics, it was necessary to develop a block level, defensible space checklist. This initial block-level checklist was intended to serve mainly for stratification purposes, and thus was not designed to give us an "in-depth" picture of defensible space characteristics. This more fine-grained picture was obtained through site-level assessments (see Chapter 10). Our block-level checklist was intended only for rough stratification purposes, and was not intended to provide us with in-depth, parcel-level data.

Based on conversations with other project personnel and an examination of defensible space literature, an initial checklist was developed. With this initial checklist 17 blocks were assessed by two raters. Reliability for the checklist items, as measured by the intraclass correlation coefficient, ranged from 1.0 to .40, and the median intraclass correlation was .83. A meeting was held of the raters to discuss different interpretations of the items. Suggestions were also solicited for improving the wording of various items. A revised checklist was developed and with this revised checklist all 104 sites in the block pool were assessed. The revised checklist is discussed in Chapter 12, and reproduced there.

Two raters judged each of the twelve blocks in one of our selected neighborhoods. Using this data, the reliability of the items on the revised DSC was estimated using the intraclass correlation coefficient. Reliabilities ranged from 1.0 to less than .00, and the median intraclass correlation was .60.[3] For the purposes of stratification, we felt that this level of reliability is adequate.

The revised checklist included several questions about street layout. As a data cleaning procedure, street layout information from completed DSCs was checked against neighborhood maps and corrected where necessary.

Several defensible space scales were constructed from items on the revised DSC. These scales drew mostly from the "Whole Street Questions" (Q01-Q09) and the "Front and Back Questions" (Q29A to Q32D). The "Each Side of Street Questions" (Q10A to Q16B) were for the most part not used since ratings on these items appeared to be moderately correlated with social organization at the block level. For the purposes of stratification we desired defensible space scales <u>independent</u> of the level of social organization.

A defensible space scale, with an estimated reliability of .73, was developed. Blocks with high scores on this scale, and thus with a "high" level of defensible space features, were those with: dead end street layout, few lanes of moving traffic, building different from surrounding streets, a street or sidewalk different from surrounding streets, clear boundaries at the ends of the street, high pole lighting, and good surveillance opportunities in front and back. A median split on the scale was carried out, and we cross-tabulated high vs. low scores on the block-level defensible space scale with high vs. low social organization, based on the neighborhood leaders' nominations. As we had hoped, the physical characteristics were independent of the social characteristics (χ^2 (1) = 1.26, p >.10).

Considering both neighborhood-level and block-level characteristics, there were twelve cells or strata in our stratification plan: 3 neighborhood types (low-income, rental; mixed; medium-income, homeowned) X 2 social types of blocks (organized, or watch out for each other vs. unorganized or people go their own way) X 2 physical types of blocks (high vs. low defensible space characteristics).

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[3]While there is a slight 'drop' in the reliability of the revised DSC as compared to the original DSC (median r intraclass = .60 and .83, respectively), this drop is slight and is probably due, in part, to the fact that the original pool of reliability blocks came from several neighborhoods and were thus more heterogeneous than the second pool of blocks, all of which came from one neighborhood.

Double-sampling from all Type 2 neighborhood cells, 32 blocks were selected for Survey I. A year later, drawing in the same way from the same pool of blocks, 31 additional blocks were selected for Survey II.

Survey I

Survey I was piloted in the Spring of 1979, and was actually carried out in the summer of 1979. A total of 447 households were interviewed, out of a desired total of 480. The actual number of interviews obtained was less than desired because on several blocks we simply ran out of households. Overall response rate (completed interviews/total number of households contacted) was 65%. Respondent and non-respondent households were not different in terms of sex of person screened, or type of building.

Assessing Site-Level Features of Survey I Households

At every household where Survey I was completed, pictures were taken, from the sidewalk and the alley, of the front and the back of the household. Subsequently, these pictures were rated on several physical dimensions. It is through this procedure that we obtained our site-level measurements of physical features. For further information on the development and quality of these rating scales, the reader is referred to Chapter 10.

Behavioral Observations

A subsample of Survey I blocks were selected as behavioral observation sites. We selected a group of blocks where there were high levels of police activity, and a group where there were low levels of police activity.[4] Our idea was to observe if there were behavioral differences in these two types of blocks, associated with their different levels of police activity. Observers conducted tours of the block, on weekends and weekdays, during the summer of 1979. Observations were made at different times of day. We sought to lay down a baseline behavioral profile during this summer period, so that seasonal variation could be compared against it. Subsequently, more modest fall, winter, and spring observations were carried out, and compared against the summer profile. In our analysis of the behavioral data we not only examined differences between high and low police activity blocks, but we also examined relationships between block means, based on the survey data, and components of the behavioral observation profile.

Abstract Picture Task

In order to more closely investigate residents' perceptions of site-level social and physical features, an abstract picture task was carried out. In this task respondents were asked to tell us what it would be like, and what would probably happen, in sites with particular combinations of features. The features investigated included surveillance (resident sitting out), defensible space features, and signs of appropriation.

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[4]This selection process is described in more detail in Chapter 8.

Respondents in this task were a subsample of those who had participated in Survey I. They were of two types. One type was a respondent who perceived a high level of problems in his/her neighborhood. Most of these respondents lived in our low-income, rental, high police activity neighborhoods. The second type was a respondent who perceived a low level of problems in his/her neighborhood. Most of these respondents lived in our medium-income, predominantly home-owned, low police activity neighborhoods. Our expectation was that perceived level of areal threat may have an influence on how residents read physical and social features.

Of course, such an abstract picture task is, by itself, limited. Nonetheless, it can provide a rough test of some critical theoretical assumptions. Also, the results from this task become much more compelling to the extent that they yield patterns observed in other analyses using different methods. Thus, there is a definite justification for projective tests such as our abstract picture task.

Survey II

A smaller scale survey, Survey II, was developed based upon initial analyses of Survey I. Only those items that were related to our outcomes of interest, were retained.

Following the same stratification plan as that used for Survey I, we selected another 31 study blocks in our 12 neighborhoods. Households on these blocks were sampled, and a total of 240 completed interviews were obtained. (Note that this is half the number of interviews as we desired for Survey I. Thus, for Survey II the sampling interval was twice that used in Survey I). Survey II was carried out in the summer of 1980.

Our initial conception had been simply to use Survey II as a replication of results obtained from Survey I. It turned out, however, that some of our important outcomes, such as police activity, were block-level measures. And, in order to have statistically powerful tests of our predictors, we needed the 63 blocks which were obtained by combining Surveys I and II. Thus, for the full test of our theoretical model, we combined the data from Surveys I and II.

Survey II Site-Level Assessments

Using the exact same procedures as were used in Survey I, the fronts and backs of all Survey II households were photographed and rated. (Note that pictures for Survey II households were taken at the same time of year as pictures for Survey I households.)

Police Data

The Baltimore City Police Department graciously provided us with two types of data: calls for service data, and Part I offense data.

A. Calls for Service Data

Every time the police department receives a call for assistance, and every time an officer responds to an event, a call for service is logged. Accounting procedures prevent the double counting of events. Thus, there is one call for service for every police event.

We requested and received calls for service data for all streets within our 12 neighborhoods, for calendar year 1978. We also requested the same for calendar year 1979, but were unable to receive such due to Department backlog.

We subsequently developed a coding scheme which allowed us to place all police activities into one of seven exclusive categories. The titles of these categories, and the activities which fall within each, are displayed in Table 1.

Rates of police activity were developed by dividing the number of police activities in each category by the total number of households on each study block. Intercorrelations between categories of raw police activity, police activity rates, and raw police activity after partialling for number of households per block, were essentially the same.

B. Part I Offenses

We also requested, and received from the Department, Part I offense data for our study neighborhoods for calendar years 1978 and 1979. The Department prepares city-wide monthly reports on Part I offenses, for later use by the FBI. Part I offenses are listed in Table 2. Definitions for each appear in the Uniform Crime Reporting Handbook (FBI, 1978).

As with the calls for service data, all Part I offenses occurring on our study blocks were coded up, and rates of offenses were developed by adjusting for number of households per block.

Comments on the Multi-Method Approach

It is readily apparent, even though we have only roughly outlined our data collection efforts, that this project was a complex undertaking. Our approach was a multi-method one, where we did not rely exclusively upon any one particular type of data. Oftentimes we sought to predict across types of data, e.g., using survey and physical data to predict police activity, or relating behavioral profile data to surveys.

Obviously, there are limitations to a multi-method approach such as ours. Data gathering is often onerous. Also, it's not possible to put all the data together into one grand synthesis. There's no one, simple, grand test. We try to come as close to that as we can in Chapters 5 and 6, but these results still must be interpreted in the context of the full pattern of results, as revealed in other chapters. Thus, there may be those who feel that our approach lacks elegance, or is too diffuse.

Table 1

Category: Crime Against Property in Private Spaces:

Events: Burglary Residence (Force or No Force)
Burglary (Other)
Breaking and Entering
Lost Property
Prowler
Larceny from Building Silent Alarm
Audible Alarm
ADT Alarm
Destruction of Property
Larceny

Category: Crime Against Property in Public Spaces:

Events: Purse Snatch
Holdup
Stolen Vehicle
Auto Theft
Highway Robbery
Oil Station Robbery
Lab Holdup
Larceny from Auto
Larceny (Bicycle)
Parking Meter

Category: Disturbing the Peace and Social Nuisances:

Events: Exposure Case
Intoxicated Person
Person Lying on Street
Disorderly Person
Juvenile Disturbance
Family Disturbance
Discharging Firearm
Mental Case
Street Disturbance

Category: Complaints of Physical Surroundings.

Events: Street Obstruction
Parking Complaint
Sanitation Complaint
Vehicle Disturbance
Animal Disturbance

Category: Accidents.

Events: Auto (Death)
Person Injured
Dog Bite
Sick Person
Fire Alarm

Table 1 (Cont'd)

Category: Crimes of Violence to Person:

Events: Yoking
Shooting
Armed Person
Murder
Rape
Cutting Assault by Threatening
Common Assault
Aggravated Assault w/ a Weapon or by Threatening.

Category: Other:

Events: Unfounded Call
Other
Oral Code (01-07)*
Person Wanted on Warrant
Missing Person
Sex Offence
Carnal Knowledge
Gambling
Suspicious Person
Assist Officer
Investigate Auto
Recovered Property

*Oral code indicates that the officer did not have time to complete a written report since he was needed elsewhere, or that no report needed to be written by the time he got there.

Table 2

Part I Offenses

Criminal Homocide

Forcible Rape

Robbery

Aggravated Assault

Burglary

Larceny-Theft (except motor vehicle)

Motor Vehicle Theft

Nonetheless, in our minds the virtues of a multi-method approach far outweigh the drawbacks. First, and perhaps most importantly, if the same type of finding emerges from two different methods, or two different combinations of methods, this is a beneficent occurrence in several ways. Each method itself must therefore be granted some ecological validity. And, the finding stands free of variance due solely to method. Second, different methods expose different aspects of local functioning. Surveys expose attitudes, pictures reveal actual behaviors that have gone in a space, and behavioral observations help localize behaviors in time and space. Thus, regardless of the overlapping patterns revealed by different methods, the multi-method approach in and of itself casts a broader, more comprehensive net around the different systems that make up the local ecology. Thus, limitations notwithstanding, the multi-method approach results in a more comprehensive assessment, and in more fine-grained results.

Appendix A

Details of Neighborhood Definition, Classification, and Sampling

The external validity of the planners' sorting of neighborhoods was also assessed. The two external criteria for each neighborhood were derived as follows. For income, 1976 tract level income estimates were used. Each tract income figure was multiplied by the % of the neighborhood population in that tract, for all tracts in a neighborhood. This yielded a weighted estimate of neighborhood income level. For % rental dwelling units, the number of owned and rented dwelling units in each block in a neighborhood was obtained from the 1970 Census Block Statistics. Dwelling units were summed across all blocks in the neighborhood to obtain % RDU for the neighborhood.

The ratings of the two planners in each district were summed. Summed ratings of income, and the summed rating of rental status, were correlated with the two external criteria. The results are presented in Table 2. Results indicated that the planners' ratings were strongly correlated with the external criteria, suggesting that the external validity of the planners' ratings was adequate.

It is also interesting to note that the planners' income and %RDU ratings are more strongly correlated with each other than the actual criteria were correlated with each other. This suggests that the planners tended to treat the two separate orderings of high-to-low income, and low-to-high % RDU, as a single ordering. In accordance with our predilection for single linear orderings (De Soto 1960, 1968), planners' judgments about income were strongly influenced by their judgments about % RDU, and vice versa.

The collinearity of income and % RDU, and the planners' tendency to perceive this collinearity as stronger than it actually was, posed some problems for our original strategy to cluster neighborhoods. Our original clustering procedure had called for obtaining four types of neighborhoods: low income, rental; low income, homeowned; medium income, rental; and medium income, home-owned. In an attempt to carry out this initial strategy, we proceeded as follows: (1) A neighborhood was classified as low income, rental if both planners agreed it was such, median income was less than $13,000, and % RDU was greater than 60. (2) A neighborhood was classified as low income, homeowned if both planners agreed it was such, income was less than $13,000, and % RDU was less than 40. (3) A neighborhood was classified as medium income, rental if both planners agreed it was such, income was greater than $13,000, and % RDU was greater than 60. (4) A neighborhood was classified as medium income, homeowned if both planners agreed it was such, income was greater than $13,000 and % RDU was less than 40.

Using these rather strict criteria for internal agreement and external validity left us with two empty classification cells--2 and 3. No neighborhoods entered into the low income, homeowned or medium income, rental cells. These empty cells necessitated a revision in our original clustering procedure. To help us in this revision, we decided to explore the bivariate scatter plot of neighborhood income by neighborhood % RDU.

After normalizing both the income and % RDU dimensions, the plot indicated that there were three types of neighborhoods: low income, predominantly rental; medium income, predominantly homeowned; and mixed. The mixed neighborhoods, on

For a starting point we examined the Baltimore City Community Association Directory. Updated annually, this is a list of most block clubs, neighborhood organizations, and area organizations in Baltimore City. Going through this book, we eliminated inappropriate organizations, i.e., ones that were too small (block organizations) or too big (area councils). Then we went to each of the planners in each of the six planning districts and asked them to tell us what the boundaries were of the neighborhood associations in their district. Also, we asked the planners to tell us about any additional neighborhoods that might exist in their district and that were not listed in the Community Association Directory. High-income neighborhoods (n=12), with median 1970 income of over $14,000, were eliminated from the sample. We estimated that in these areas crime or fear were less of a pressing reality than elsewhere, and thus that these areas were not directly within the program focus of the funding agency.

The neighborhoods in each district were sorted by two district planners. Planners conducted two sorts. First, neighborhoods were sorted by income using a four-point scale, then the neighborhoods were sorted by tenure form (% rental dwelling units or % RDU) using a four-point scale. Planners were able to successfully carry out the sorts without difficulty.

Interjudge reliability was assessed using the intraclass correlation coefficient (Winer, 1962). This coefficient can be interpreted in terms of variance explained (r^2). The correlations are shown in Table 1. While the overall intraclass correlations for the entire city are respectable, there is district-by-district variation in the level of reliability, and in some cases (e.g., District 6), large, within-district variation across the type of sort. This suggested that there might have been factors indigenous to the neighborhoods in each district that were influencing the reliability of the sorting.

In order to investigate the reliability problem further, we assessed the distribution of planners' disagreements as a function of neighborhood characteristics. The results are displayed in Figure 2 and 3.[5] These indicate that the planners' disagreements about income and tenure approximate slightly skewed, normal distributions. These disagreements are not randomly distributed, i.e., we do not have two flat distributions. Since it is assumed that error is randomly distributed, and the planners' disagreements were not, the planners' disagreements should not be considered as error. The planners' disagreements reflect a signal-noise problem, not a problem in unreliable judgments.

The distribution of planners' disagreements sheds light on the pattern of intraclass correlations. Two planners in a district were more likely to disagree if they were judging a neighborhood in the midrange of the income of % RDU distributions. In districts with more neighborhoods near the middle of the income and % RDU distributions, planners had lower interjudge reliability. Thus, while interplanner reliability varied across districts, this variation appears fairly lawful.

[5]Both the income and tenure form scales were collapsed into dichotomous scales for the purpose of assessing disagreement; i.e., a disagreement was counted only if the two planners placed a neighborhood on opposite sides of the midpoint of the scale.

Inter-Planner Reliability by Planning District:

Intraclass Correlations

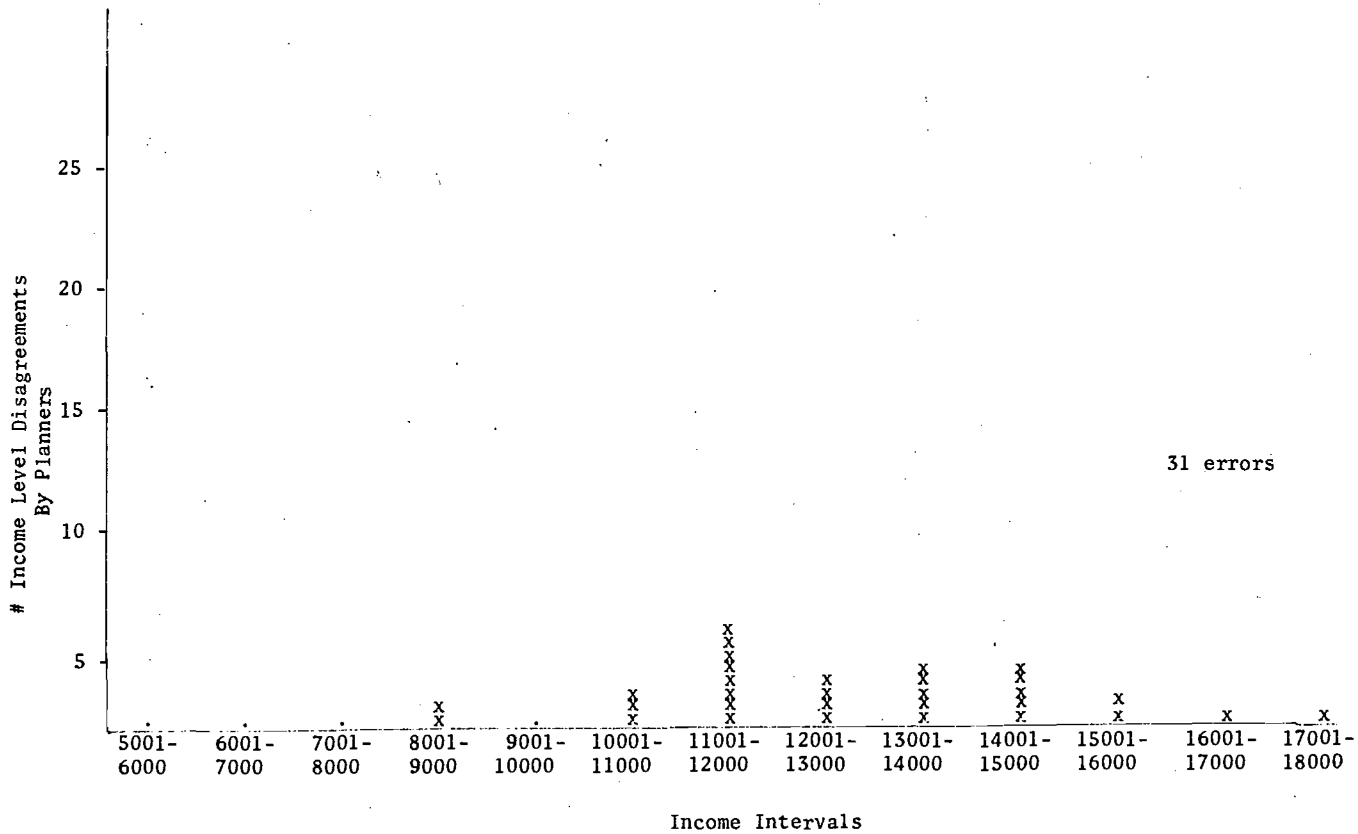
District (# nbhds)	Tenure Form	Income
1 (24)	.68	.46
2 (25)	.32	.70
3 (39)	.44	.52
4 (28)	.51	.61
5 (39)	.62	.59
6 (34)	.47	.77
All	.68	.66

Table 1

Baltimore Neighborhoods

Distribution of Income Disagreements

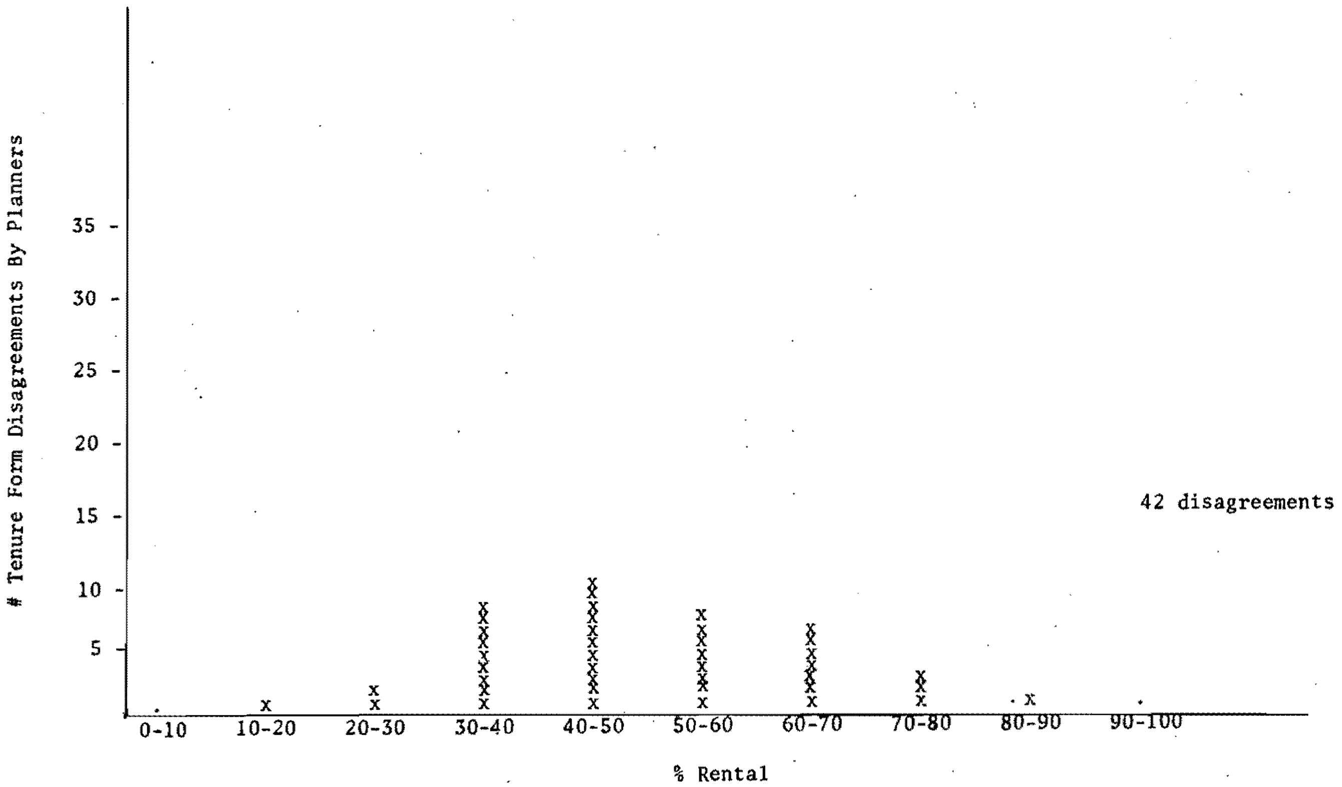
Figure 1



Baltimore Neighborhoods

Distribution of Tenure Form Disagreements

Figure 2



the income and % RDU dimensions, were between the other two types.

Thus, neighborhoods were grouped into three clusters: low income, rental (Group 1), using the same criteria as for 1 above; medium income, homeowned (Group 3), using the same criteria as for 4 above; and the remaining mixed neighborhoods (Group 2). Correlations were computed separately for each group of neighborhoods and the results are shown in Table 3. In Groups 2 and 3, income and % RDU are uncorrelated, while in Group 1 income and % RDU are very modestly related. Of course, taking Group 1 and 3 together yields a strong correlation since these two groups comprise the extremes of the scatter plot.

The implications of the above results are worthy of some discussion. It appears that, in Baltimore City at least, there are three types of neighborhoods: low income, mostly rental; medium income, mostly owned; and "mixed" neighborhoods. (The inclusion of the 14 high-income neighborhoods which we had included would probably not change this grouping, but merely inflate the homeowned groups.) Furthermore, these mixed neighborhoods present a rather fuzzy image to the planners: it is difficult for them to classify these places as clearly low or medium income, or clearly rental or owned. In distinction, the more extreme neighborhoods present a much clearer image: planners agreed more often on what were the low-income, rental and medium-income, owned neighborhoods. Also, it later turned out that the fuzzy image of these Group 2 neighborhoods was grounded in actual circumstances. Group 2 neighborhoods contained many streets in bad condition with dilapidated and/or vacant houses, as well as streets where the housing was in much better shape and the property looked after.

A. Sampling Neighborhoods

In each cluster (Group 1, Group 2, and Group 3) the neighborhoods were arranged in a serpentine, geographic ordering. An interval sampling procedure with selection probability proportionate to size (Sudman, 1976) was used. The size figure used was the total number of dwelling units in the neighborhood. Three neighborhoods each were drawn from Groups 1 and 3. Group 2 was double sampled due to its bulk, and six neighborhoods were drawn from it.

The sample of neighborhoods drawn represents a good mix in terms of neighborhood size, housing type, east-west geographic location, and ethnicity. Of course, there is also variation in tenure form and income, as guaranteed by the clustering.

Our neighborhood-level stratification was later checked using the results of Survey I. The results were as predicted. The three types of neighborhoods differed as expected.

CHAPTER 4

STATEMENT OF CONCEPTUAL FRAMEWORK AND PROPOSED MODEL

Ralph B. Taylor
Stephen D. Gottfredson
Sidney Brower

A model of informal control in the urban residential environment is proposed. The model draws on recent research in the areas of defensible space, social networks, and human territoriality. The model suggests that any particular space has the potential to be appropriated or controlled by residents. The social potential for appropriation increases as homogeneity, and the strength of local social ties, increase. The physical potential for appropriation increases as defensible space features, signs of appropriation, and physical signs of civility increase. As spaces are appropriated, crime-related outcomes may decrease. Furthermore, social ties, defensible space features and homogeneity may dampen crime-related outcomes directly, as well as indirectly through a strengthening of the territorial attitudes and behaviors that go along with appropriation.

Some Background Comments on the Conceptual Framework

The research described in this report seeks to test a substantially modified version of defensible space theory within the framework of research on human territoriality. As previous research has indicated (cf. Edney, 1974), there is overwhelming evidence that humans demonstrate territorial behavior. Thus, while the concept of territoriality was originally "borrowed" from ethological research, the phenomenon has been established in its own right in the human realm, and in this realm the concept has a slightly different meaning. While animal territoriality is usually viewed, especially by popularizers, as an open instinct, it is clear that with humans territoriality involves a series of goal-directed behaviors, concerned with control over or familiarity with particular spaces, and that territorial behaviors are accompanied by territorial attitudes or cognitions (e.g., the feeling that I control access to the space and the activities in it). Furthermore, with humans, territorial behaviors and territorial attitudes often are closely coupled. We wish to carefully use the concept of territoriality in the proposed research in a non-reductionist, non-metaphorical fashion.

We feel that the concept of human territoriality is an appropriate framework for defensible space theory, and for research on use of residential spaces in general. Researchers agree (e.g., Altman, 1975) that one of the important benefits derived from a territory is control over a particular space; i.e., safety, privacy, feeling at ease, and being in a place where you see known others and not strangers. We also recognize that "control" is an exceedingly complex concept. For example, in a factor analysis of territorial cognitions of urban and suburban residents, Taylor (1977) found two control dimensions in each group of residents. The first factor was comprised of the traditional, quasi-ethological benefits of territoriality that are usually desired continuously (e.g., safety), while the second factor was comprised of benefits which are desirable on an intermittent basis (e.g., privacy). In the proposed research we are interested in the various forms and degrees of control that are involved in space management. Thus, territorial control will be closely examined with an eye to differentiating its components, and to clarifying the relation between control, resident characteristics, spatial characteristics and crime-related outcomes.

It should be borne in mind, however, that in a residential context the ability to control a space is most often characterized by the absence of unwanted intrusions. (This implies that in areas where the likelihood of unwanted intrusion is small, residents may well demand a lesser degree of control). Because of this, residents can more meaningfully discuss and respond to questions about problems related to a <u>lack</u> of control (e.g., how much of a problem is littering? how much of a problem is trespassing?) than they can to questions about control in the abstract. Thus, in the present research we examine space-related problems and the lack thereof, assuming that these vary inversely with resident-based control.[1]

Another major tenet of the research is that territorial behavior and attitudes vary across sociocultural contexts. Scheflen (1971) found that territorial rules concerning inside space varied widely across ethnic groups, and we would expect the same variation across groups for <u>outside</u> spaces (cf. Suttles, 1968; Gans, 1970). Thus, we anticipate that what may be an acceptable level of control or an adequate social or physical strategy for achieving control will be different in different sociocultural contexts.

Δ local social ties

We hypothesize that people who live in a block in which residents are culturally homogeneous are more likely to recognize common territorial signs and to abide by common rules of behavior. In such a block residents may expand their territories and feel greater responsibility and concern about shared spaces, like a local park. And, in a homogeneous area weaker territorial markers are likely to be adequate for controlling space use by residents (e.g., flower beds instead of fences). Such a block is most likely to be found in higher income, less problematic areas, and will be referred to as having a high <u>people potential</u>. Culturally heterogeneous areas are likely to have lower people potential and people there are less likely to undertake collective appropriation of shared spaces (although this can be compensated for by providing strong leadership or introducing an organizational structure). Redundant and blatant territorial displays may be necessary for effective territorial control in a heterogeneous area. Also, a similar situation may exist in locations where there are a great many outsiders using the space, and at the same time, there are subcultural differences between outsiders and residents.

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1 Other psychological researchers investigating issues related to locus of control have also found that people have a problem talking about control (Perlmuter, 1981).

Although our assertion of the virtues of homogeneity is straightforward, we are aware that the issue of whether residential areas should be homogeneous or heterogeneous is hotly contested. (Gans, 1967, 1968, Ch.13), and will continue to be of concern to planners for years to come. (See also Chapter 13 in this report.) Nonetheless, when considering the specific outcome of resident-based informal control, we anticipate that homogeneity will have a beneficial influence. Of course, its overall virtue must be weighed by considering this influence in conjunction with the other effects of homogeneity on community life.

We expect that territorial attitudes and behaviors play a crucial role in mediating the impact of social and physical environment variables on crime-related outcomes in different spaces. In terms of small-scale, specific outdoor spaces, our territorial measurements will include the following arenas. Home spaces, that is outdoor spaces which are private property such as front yard and back yard, and which are intimately associated with the most vulnerable and protected of all spaces--the home itself. These are the outdoor spaces where resident's control should be highest; they provide a reference point against which territorial attitudes toward other spaces can be compared. Near-home spaces, such as a sidewalk in front of the house, and alley, are in some instances appropriated or cared for by residents acting either as individual households or as a residential community (Brower, 1980). These are, however, also very labile spaces and can also be the site of problems, especially in more urban areas (Taylor and Stough, 1978). Off-block spaces, such as pocket neighborhood parks, are spaces that cannot be appropriated by an individual resident, but may be appropriated by a group of residents acting collectively. These off-block spaces are often mentioned by residents as trouble spots. In terms of larger-scale, specific areas, our territorial measurements also assess attitudes toward the neighborhood . Thus, we asked whether residents knew the neighborhood boundaries and name, how dangerous it was, and so on.

Close attention will be paid to the existing physical features which are associated with territorial behaviors and cognitions. We recognize three categories of physical features. Defensible space features act as a deterrent to intrusion by outsiders. These are often relatively permanent features of the landscape like building layout, and design features that permit surveillance and delineate boundaries. Signs of appropriation or territorial markers signify possession and attachment to a space. These are usually user-generated and relatively impermanent elements, like ornaments or planting. Signs of civility signify social responsibility and a common code of behavior, and so, by implication, the existence of social order. These are usually user-generated and need to be constantly renewed, like neatness, tidiness, and upkeep.

With regard to particular spaces, we make two assumptions. First, that there are two types of appropriation: appropriation by a resident acting as an individual, and appropriation by a group of residents acting as a collectivity. Second, that each space has a spatial potential which is a measure of how well the space is suited to a particular type of appropriation. Spaces that are high on spatial potential are easier to appropriate, and this high spatial potential is due largely to physical defensible space characteristics.

Spaces that are higher on social and spatial potential are more likely to be appropriated. This act of appropriation and the accompanying cognitions can act as a buffer, distancing the occupant(s) from unwanted behaviors. Through appropriation the residents(s) feels buffered or protected from various exogenous threats. Control of successive spaces away from home can be progressively more relaxed, and defensibe behavior at the boundaries between one space and its outward adjoining space can be minimal. Of course, threat may increase and make the buffers inadequate. Thus, the effectiveness of high spatial potential and high social potential depends on their strength relative to the intensity of threats.

When there is low spatial potential and/or low social potential to appropriate space, the individual or group may experience threat. Threats to safety are experienced as imminent. There is heavy reliance on defensive behavior, and even close-to-home spaces are experienced as unsafe. Of course, in different situations there may be varying degrees of threat. In a setting where threats are low or non-existent and spatial and social potentials are low, the difficulty in appropriating spaces may not be perceived as troublesome.

Statement of the Model

The basic model we propose to test appears in Figure 1. The model suggests the following links. Increasing homogeneity, defensible space features and local ties are associated with stronger territorial attitudes and behaviors. These mediating variables, in turn, dampen crime-related outcomes. The independent variables may also directly influence crime-related outcomes. Also, defensible space features, by providing a safe outdoor space for chatting, may strengthen local ties. The main effects of each of the independent variables are expected to be strongly supplemented by the interactions among the three groups of variables. That is, the effectiveness of a particular social or spatial potential may be differentially effective in various settings.

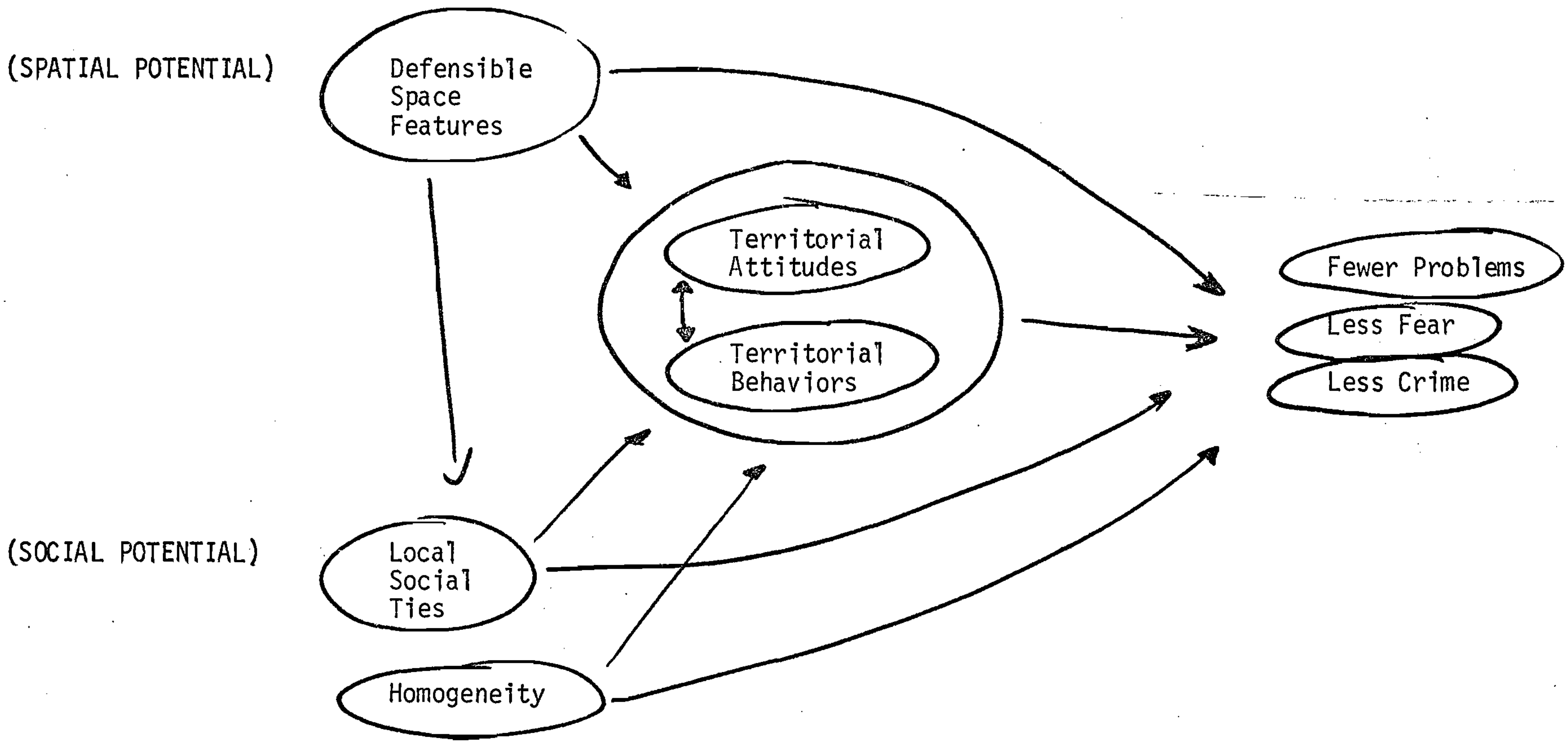
A comment on the role of local social ties is in order. Research which has investigated informal social control (Suttles, 1968; Gans, 1967; Crenson, 1978; Wheeldon, 1971; Wellman and Leighton, 1979) has suggested that acquaintanceships between people helps in maintaining a congenial and trouble-free climate. Thus, social ties may directly dampen crime-related outcomes. But, they may also encourage people to become more territorial for two reasons: as social climate improves, there is less fear of retaliation, and, as the climate improves, the person is also encouraged and perhaps prodded by others to be more attached to his/her property.

The mediating variables -- territorial behaviors and cognitions -- are expected to closely covary. Furthermore, the mediating variables are a crucial link in the model. We anticipate that a substantial portion of the effect of the predictors is channeled through these mediators.

The dependent variables are listed in the order of increasing difficulty to change, i.e., we expect that territorial behaviors and cognitions will have the strongest impact on level of problems. By problems we're referring to small stressful events such as noisy youths or adults, littering, strangers in

Figure 1

Basic Model



the yard, etc.. Lazarus and Cohen (1977) classify stressors such as these as "daily hassles". We expect that these problems are present to some extent in environments where there is high fear of crime or high crime. Also, in light of previous research we expect crime and fear of crime to vary relatively independently.

Finally, with regard to outcomes, we expect that particular predictors may have differential impacts across crime-related outcomes. For example, defensible space features may be a strong deterrent to burglary, but may have little impact on local problems. Signs of appropriation or territorial markers such as flowers and decorations may have little influence on burglary, but may be associated with a lower level of problems. We propose to treat our model as a linear, fully recursive causal model. We therefore assume that the paths represented by the arrows are the major causal pathways which operate. Thus, for example, we do not assume that fear might "feed back" to influence territorial functioning. One might object the our assumption of recursiveness is somewhat simplistic. We readily grant that it is. The assumption of recursiveness does, however, gain some justification from the following points. (1) It is an assumption which defensible space theorists have also made, and feel is theoretically justified (Newman and Franck, 1980). (2) Such an assumption allows us to test the data with a causal model. (3) With our present data it is simply not possible to test an assumption of bi-directionality, or system-like feedback. Thus, we felt it was best to treat our model as a composite of uni-directional causal paths.

CHAPTER 5

DEFENSIBLE SPACE, SOCIAL NETWORKS, AND HUMAN TERRITORIALITY AS PREDICTORS OF CRIME-RELATED OUTCOMES[1]

Ralph B. Taylor
Stephen D. Gottfredson
Sidney Brower

Sociological and psychological research has suggested that informal control can be fostered by several factors. Architectural supports for control, such as defensible space features, have been suggested, as have interpersonal supports such as local social ties and territoriality. Typically, however, researchers have failed to simultaneously assess the importance of these factors. We hypothesized that crime-related outcomes would decrease as defensible space features and local social ties became more extensive, and as territorial functioning became stronger. Cross-sectional survey data from 687 respondents living on 63 blocks were combined with police data and physical assessments to test these hypotheses. Results from hierarchical step-wise regressions at the block level and at the individual level, yielded support for the hypotheses. Thus, the present results support defensible space, informal social control, and territorial theories about resident-based control. At the same time, the results revealed interconnections between the three theories which demand further theoretical attention. Furthermore, our findings suggest that more complete understanding of residential functioning can be obtained from research which has a multidisciplinary perspective.

Introductory Statement

This chapter first reviews some of the various theoretical perspectives - from the planning, sociological, and psychological traditions - which have dealt with informal control in the residential environment. We close the review with a brief statement of our central hypotheses. Complete results of block-level analyses are reported and discussed, followed by results and discussion of individual-level results. We close with a general discussion which summarizes the milestones of the present analysis and explores implications.

Statement of the Problem and Background

A friend is fond of relating how her father will connect an air raid siren to the large, potted plants on the end of his driveway on Halloween. Would-be miscreants are deterred by a klaxon which splits the night air as soon as a plant is lifted. Over the years, few items have been lost. Most of us are probably in sympathy with this home-grown electrician and property protector. Our sympathy (and perhaps some slight admiration) is rooted in the recognition that the homeowner is exercising control over his residential environment. Of course, it is always possible for residents to be overly zealous in exercising

[1] An earlier version of this chapter was presented at the Annual Meeting of the American Psychological Association, New York City, September, 1979.

control, and the excesses of vigilantes are not pleasant. At present, however, and particularly in urban environments, the problem would appear to be too little resident-based control, not too much.

We seek to assess the behavioral outcomes (police activity) and psychological outcomes (fear, increased perception of problems) that would appear to vary inversely with such control. This is not to deny that actual or perceived control may have many other covariates. Activities such as neighborhood-level opposition to businesses that are associated with vice, or block-level crime prevention activities such as patrolling, may also be associated with real or perceived control. However, our focus is narrower, and we examine only a few outcomes out of a potential pool of many. Nonetheless, these few outcomes reflect some very major concerns - crime, fear, and problems or nuisances.

Research on the determinants of resident-based control has been broad-based, and falls mainly into three categories. Research by Newman and his colleagues (Newman, 1973, 1979; Newman and Franck, 1979; see also Chapter 1) has focused largely on design factors, such as defensible space features. Newman has suggested that these physical elements can promote residents' control by creating clearly bounded or semi-private areas under the dominion of residents, and by providing surveillance opportunities. Almost all the work on defensible space features has focused on the public housing environment. One goal of our research has been to assess the utility of defensible space features in the more standard (i.e., non-project) housing environment.

A second stream of research has focused on the social determinants of resident-based control. For example, work by Suttles (1968) has indicated that the presence of strong local networks (i.e., groups of friends or acquaintances) may help dampen disturbances, and regulate access to an area; work by Crenson (1978) has indicated that people in close-knit networks rely on police less than do people in loose-knit networks for dealing with disturbances; and work by Wheeldon (1969, espec. pp. 178-179) has suggested that pressure to conform to norms can be administered through social networks. Such studies of informal social control have, however, been limited to case studies. In the present study we sought to determine if, for a systematic sample of respondents living in different neighborhoods, local ties were associated with crime-related outcomes.

Another relevant stream of research has focused on the territorial determinants of resident-based control. For example, work by Brower and his colleagues (Brower and Williamson, 1974; Brower, Stough, Headley and Gray, 1976; Brower, 1979, 1980) has examined how and why urban residents gain or lose control of small-scale, public, urban spaces such as neighborhood parks. Their results suggested that these small public spaces were often located between local social groupings, in a "no-man's land" beyond the jurisdiction of particular resident groups. Lack of dominion over the space by a collective group was associated with fears about using the locale. By contrast, streetfronts located within local groupings were often collectively appropriated, and were sites where considerable control was exercised. This territorial perspective, focusing on specific locations, may help to illuminate the determinants of resident-based control.

We have sought to agglomerate these different perspectives into a single model. Thus, we hypothesized that as defensible space features become more widespread, as local social ties strengthen, and as territorial attitudes and behaviors strengthen, crime, fear, and problems will decrease. All of these criteria are important practically, in terms of their impact on residents, as well as theoretically. In particular, fear of crime is quite widespread and in this sense a serious problem. Local problems or nuisances, although they don't have the immediate impact of crime or fear, may in the long run constitute very substantial costs or stresses for residents. These nuisances, or "daily hassles" as they are called by Lazarus and Cohen (1977) may be much more subtle, but on a large scale just as upsetting as crime or fear.

This study focuses on two levels of analysis. We report analyses for which the block is the unit of analysis. The block, defined here as the two sides of the street, is a meaningful spatial unit for planners, police, and local organizers. Our second focus is on individual deviations from block means, i.e., pooled within-block residuals. Analysis of deviation scores is by definition statistically independent of analysis of block means. A focus on deviation scores is therefore a focus on psychological or individual-level processes. The concern here is whether or not individual characteristics, net of block characteristics, are meaningfully interrelated. (See Chapter 2 for a fuller discussion of the reasons behind the dual focus.)

Method

A. Site Selection

We started developing our sampling frame by defining Baltimore City neighborhoods. For this task we used information from the local Community Association Directory, Baltimore City District Planners, and local community leaders. Planners also rated the defined neighborhoods on income and % rental dwelling units (% RDU) dimensions. The results of this rating task showed good reliability between raters, and good external validity when compared with 1970 census information. (The 1970 data was all that was available to us at that time.) Using census data, an income and % RDU figure was computed for each neighborhood. Examination of the bivariate scattergram of the neighborhoods on these two dimensions suggested three types of neighborhoods: low-income, predominantly rental; medium income, predominantly homeowned; and mixed. On the income and % RDU dimensions the mixed neighborhoods were "between" the other two types.[2] Double-sampling from the mixed neighborhood category (due to the number of neighborhoods in that group) and sampling from the other two groups resulted in a sample of three low-income, rental; six mixed; and three medium-income, homeowned neighborhoods using a probability proportional to size (pps) strategy (Sudman, 1976).

To select blocks, neighborhood leaders in each sampled neighborhood were contacted and interviewed. We asked these leaders to nominate examples of two

[2] Manipulation checks using Survey I data indicated that, for our sample, the ordering of respondents living in the different neighborhoods was the same ordering, on the income and % RDU dimensions, as indicated in the census data.

types of blocks within their neighborhood: blocks where people looked out for each other and worked together (socially organized or cohesive), and blocks where people went their own way (socially disorganized or non-cohesive). Our purpose in gathering these nominations was to obtain blocks which varied along a social network dimension. (Checks on Survey I data indicated that this stratification was successful). Leaders in each neighborhood were readily able to nominate several examples of each type of block.

We then assessed the block-level defensible space features of each block in our pool of about 100 blocks. Subsequently, defensible space scales were constructed, and blocks were put into either a "high" or "low" group using a median split. (See Chapter 11 for more details.)

Thus, our multi-stage stratified sample consisted of 12 strata: 3 neighborhood types (low-income, rental; mixed; medium-income, homeowned) X 2 types of social blocks (organized or unorganized) X 2 types of physical blocks (high vs. low defensible space). For Survey I, four blocks were sampled from each of the mixed neighborhood strata, and two blocks were selected from each of the other strata, for a total of 32 blocks. Thirty-one blocks were selected for Survey II using the same procedures. For Survey I, we attempted to obtain 40 completed interviews from each stratum. For Survey II we obtained 20 completed surveys for each stratum. Since Survey II used a sampling interval that was twice as large as that used in Survey I, the Survey II cases were re-weighted appropriately.

B. Household and Respondent Selection

All blocks were block-listed by field workers; i.e., all occupied housing units were counted. The total number of occupied housing units in each stratum was then determined, and designated households were selected using a random start and the appropriate sampling interval. At this level, our primary sampling unit was the household, and not the individual.

When field workers arrived at a designated household and found someone at home, they attempted to complete a screener which asked just a few short questions. If there was just one head of household, and he/she was married, the designated respondent became either the head or his/her spouse. If there were multiple heads of households they were enumerated, and then one was randomly selected following the procedure suggested by Kish (1949).

If no contact was made at a designated household after three attempts at various times during the week, an alternate household was assigned to the interviewer. If the interviewer was unable to survey the designated respondent after a week of trying, an alternate household was assigned.

C. Survey Procedures

Survey I was completed in the summer of 1979; Survey II was completed in the early summer of 1980, almost a year later. Survey I took about an hour to complete, and Survey II took approximately 40 minutes to complete. Fully informed consent was obtained from all respondents, and all respondents were paid for their participation. Survey II was a shorter version of Survey I, including only items which initial analysis of Survey I indicated were important.

Each survey included sections on household composition, residence history, demographics, local social ties, perception of local crime and problems, fear, neighborhood identification, and territorial attitudes.

D. Respondents: A Sketch of the Sample

The following characteristics describe the full (Survey I and II) sample of 687 households. Fifty-three percent of the households were owner occupied while 47% were rented; 39% of the households were white while 61% were non-white; and average household size was slightly over three persons, while the median household size was two. Thirty-four percent of the respondents were male while 66% were female. Average respondent age was 44 years (median = 40), and average educational level was 11th grade. Average length of residence in the neighborhood was 16 years (median = 12), and 22.2% of the sample was unemployed at the time of their interview.

E. Site-Level Assessments

After a household was interviewed, photographs (color slides) were taken of the front and rear of the house. The physical features shown in these slides were subsequently rated by two independent raters. These ratings assessed defensible space features, signs of appropriation or territorial markers, and signs of upkeep and care. These rating scales are described more fully in Chapter 10.

F. Police Data

Police calls for service data for calendar year (CY) 1978 for every study block were obtained from the Baltimore City Police Department. We also obtained, for each block, Part I crime data for CY 1978 and 1979. (Calls for service data for 1979 was not available in time to be included in these analyses.) Further details on the relationships between Part I offenses and calls for service data appear in Appendix A. In our analysis we focus on police calls relevant to crimes of violence against persons.[3] Volume of calls for service in this category correlate most strongly with Part I offenses concerned with aggravated assault.

G. Transforms

Variables with skewness of greater than ±1 were normalized via a log transform, and subsequently analyzed using hierarchical step-wise regression, with the clusters of variables entered according to their theoretical position (Cohen and Cohen, 1975). (See Chapter 4 for an explanation of the causal model.)

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[3] For further comments on why this category of police activity was chosen, see Appendix A.

H. Multi-Collinearity

At the block level our matrices of predictors exhibited multi-collinearity. That is, the different predictors were highly interrelated with each other, or redundant with each other. Multi-collinearity creates a problem for regression analyses and causal modeling, and these problems are fully discussed in Appendix B. We felt that these problems had to be dealt with, and thus sought to reduce multi-collinearity.

Furthermore, in the context of the present analysis we felt that it was particularly important to solve the problem of multi-collinearity. Consider the following points: (1) With the number of blocks in our analysis, our regression analysis had marginally acceptable statistical power to begin with. By reducing the number of predictors, and thus the multi-collinearity, we were able to improve the statistical power of these regressions. Such an improvement was valuable. (2) We wished to subsequently carry out path analyses. These rely exclusively (in standardized form) on beta weights. The less collinear the matrix of predictors, the more stable these beta weights would be. (See Appendix B for explanation; also Gordon (1968).) Again, we felt that this was no small gain.

One might object to our over-concern about multi-collinearity on two counts. First, one might argue that it is simply better to let the computer program decide when multi-collinearity becomes a serious problem. Unfortunately, it has been the authors' experience that programs will recognize multi-collinearity as serious only after ridiculous results have already been produced. For example, we have obtained regression results where the standard error for beta weights was in the range of hundreds. Thus, it is probably better not to let the computer decide such an issue. Second, one might object that eliminating predictors to reduce multi-collinearity may result in the deletion of variables which represent sources of socioeconomic variation that ought to be controlled for. The consequence of deleting socioeconomic variables in an attempt to reduce multi-collinearity is that the resulting regressions may overestimate the influence of endogenous variables by failing to control adequately for exogenous variables.

In reply to this second objection, we suggest that the following points be considered. First, the most direct empirical way to handle this objection, and still avoid the problem of multi-collinearity, would be to delete redundant predictors with the exception of socioeconomic variables. Thus, socioeconomic variables would be retained, which otherwise would have been eliminated due to their redundancy. Such a procedure, however, has not been suggested or used in dealing with multi-collinearity. Nor would such a procedure be wise because it would work against the elimination of redundant predictors. And, the standard procedure will still retain a socioeconomic predictor if it is not redundant with other predictors. Second, we provide regression results based upon the full matrices of predictors, and these appear in Appendix D. A comparison of these regressions based on the full matrices with the regressions based on the reduced matrices, reveals few substantive differences, particularly if we consider the beta weights, which represent the information to be used in subsequent path analyses. In sum then, we feel that our procedures for reducing multi-collinearity in no way amounted to an underestimation of the influence due to socioeconomic variation.

Results and Discussion
Block Level: Analyzing Block Means

I. Intercorrelations of Outcomes

The intercorrelations between the three block-level criteria appear in Table 1. Our police activity measure is statistically independent of both perceived level of problems, and of fear. Total problems and fear are, however, significantly intercorrelated. Despite the empirical association of these two outcomes, given the importance of each, and given the conceptual differences between the two types of outcomes, we report analyses on all three outcomes. (For those who still might be unhappy about separate analysis of somewhat intercorrelated outcomes, and concomitant problems of inflating alpha levels, we suggest simply ignoring our analysis of the third variable, fear.)

J. Predicting Police Calls for Crimes of Violence to Persons

The results of our reduced model regression predicting police calls for crimes of violence to persons appear in Table 2. In this regression defensible space features were entered on the first step, social variables on the second step, and territorial variables on the third step. Interaction terms, including pairs of variables in different clusters, were entered on the fourth step.[4] No demographic variables merited entry in this equation.

K. Main Effects.

Site level defensible space features provide a significant increment of 7% in explained variance. Blocks with higher levels of real and symbolic barriers have lower levels of police calls for crimes of violence. Local social ties also explain a significant 9% of outcome variation. Blocks where respondents belong to a local organization that co-residents also belong to are blocks with lower levels of police calls for crimes of violence. The two territorial variables as a cluster do not provide a significant increment in R^2, but, individually, each of the two variables is significant. Blocks where residents know the neighborhood name, or feel more responsible for near home spaces such as alley and sidewalk, are blocks with lower levels of police calls for crimes of violence. The main effects, in toto, account for a significant (adjusted for shrinkage) 18% of the variation in police calls for crimes of violence.

L. Interaction Effects

Our theoretical model suggests that pairs of predictors may have a joint influence on outcomes of interest. Therefore, we tested the significance of all possible between-cluster, two-way interactions. Entered on the fourth step (after the main effects), the two-way interaction effects provided an additional 18% of explained variance, and this increment was significant. (See Table 3).

[4] For an explanation of the hierarchical ordering used in the present analysis, see Appendix E.

Table 1

Intercorrelations of Block-Level Outcomes

	$FCNBX	TOTPROBX	FEARX
$FCNBX	1.00		
TOTPROBX	.08	1.00	
FEARX	.22	.53	1.00

Note. n = 63 blocks.

$FCNBX = log of police calls for service, per household, related to crimes of violence against persons, plus one.

TOTPROBX = total level of problems in the neighborhood. Cronbach's alpha for this scale = .84. Higher score means more problems.

FEARX = two item fear scale. Cronbach's alpha = .64. Higher score means more fear.

Note. Correlations greater than .25 are significant at p <05.

Table 2

Test of the Reduced Block-Level Model:

Predicting Police Activity Relevant to

Crimes of Violence Against Persons (ØFCNBX)

Cluster	Increment in R^2	F	Variable	R^2	t	B	Beta
Defensible Space	.07	F(1,61) = 4.37*	FRONT23X	.07	-1.34	-.01	-.16
Social	.09	F(1,60) = 6.21*	Q14AXX	.09	-1.64	-.07	-.20
Territorial	.08	F(2,58) = 2.99	Q16XRES	.03	-1.99*	-.03	-.25
			TRNHMRPX	.05	-1.92*	-.03	-.24

Total R^2 = .23   F(4,58) = 4.41**

Adjusted Total R^2 = .18   F(4.58) = 3.19*

Note. * = p <.05; ** = p <.01   n = 63 blocks. Model I error term was used to test increment in R^2. T-tests are one-tailed.

Determinant of matrix of predictor was .55. X^2_h (10) = 48.11, p <.001. One predictor (TRNHMPBX) was subsequently dropped based on R^2 delete.

Table 2 (Cont'd)

Note All variables are block-level means.

$FCNBX = log of police calls for crimes of violence, per occupied household, plus one.

FRONT23X = extent of real and symbolic barriers in front, with a higher score indicating barriers which are more widespread.

Q14AXX = whether or not respondent belongs to a local organization that co-residents also belong to; 1 = no, 2 = yes.

Q16XRES = whether or not respondent knows the neighborhood name; 0 = does not know name, or cannot supply name; 1 = does not know name and can supply name. Variable has been residualized with respect to race, owner/renter status, trust in neighbors, and gardening in back.

TRNHMRPX = territorial responsibility in near-home spaces, with higher score indicating more responsibility.

Table 3

Reduced Block-Level Model Predicting Police Calls for

Crime of Violence to Persons (%FCNBX):

Interaction Terms

Interaction Term	R^2	t
(FRONT23X X Q14AXX)	.03	1
(FRONT23X X Q16XRES)	.01	1
(FRONT23X X TRNHMRPX)	.06	2.51*
(Q14AXX X Q16XRES)	.03	2.19*
(Q14AXX X TRNHMRPX)	.06	2.25*

Increment in R^2 due to interaction terms = .18 F(5,53) = 3.29*

Total R^2 including main effects and interactions = .41 F(9,53) = 4.17***

Adjusted Total R^2 including main effects and interactions = .32 F(9.53) = 2.71*

Note. * = $p < .05$; ** = $p < .01$; *** = $p < .001$. T-tests are two-tailed. n = 63 blocks. Model I error term is used to test increment in R^2.

<u>Note</u>. (FRONT23X X Q14AXX) = interaction between real and symbolic barriers and belonging to a local organization.

(FRONT23X X Q16XRES) = interaction between real and symbolic barriers in front, and knowing the neighborhood name.

(FRONT23X X TRNHMRPX) = interaction between real and symbolic barriers in front and responsibility in near home territories.

(Q14AXX X Q16XRES) = interaction between belonging to local organization and knowing the neighborhood name.

(Q14AXX X TRNHMRPX) = interaction between belonging to local organization and territorial responsibility in near home territories.

Table 3 (Cont'd)

Three of the interaction terms were associated with a significant t-test. In order to interpret these significant interactions each variable was split at the median, and the four relevant means for each two-way interaction were examined. (See Appendix E for further comments on this procedure.)

The interaction between real and symbolic barriers in front, and territorial responsibility in near home spaces (FRONT23X X TRNHMRPX) indicated that responsibility only had an effect on police calls when real and symbolic barriers were low, and that when real and symbolic barriers were high, responsibility had little impact (see Table 4). The interaction of real and symbolic barriers with belonging to an organization, although associated with a non-significant t-test, revealed the same type of pattern: organization was influential only when real and symbolic barriers were low. Thus, the presence of real and symbolic barriers lessens the impact of other social and territorial variables.

The two other significant interaction terms revealed a conditional influence involving local social ties and territorial attitudes. The interaction between belonging to a local organization and territorial responsibility (Q14AXX X TRNHMRPX) indicated that territorial responsibility was only influential when local organization was absent. The interaction between local organization and knowing the neighborhood name (Q14AXX X Q16XRES) suggested, however, that local organization was influential only on blocks where residents did not know the neighborhood name. Thus, the impacts of social and territorial variables are clearly linked.

M. Predicting Total Problems

1. Main effects. The results of our reduced model regression predicting total problems appear in Table 5. The demographic variables explain a significant 20% of the variation of the outcome, and suggest that perceived level of problems is lower on blocks where residents have lived longer, and on blocks with a higher portion of white residents. Defensible space features add a significant additional 7% of explained variance, and suggest that problems are lower in blocks where real and symbolic barriers on the front are more widespread. Territorial variables then add a significant additional 10% of explained variance and suggest that problems are lower on blocks where: there is more gardening in back, residents can better distinguish between insiders and strangers, and residents know the neighborhood name. (In this reduced model no variables from the social cluster of predictors were entered.) In toto, the main effects (adjusted for shrinkage) explain a significant 30% of the block-level variation in total problems.

2. Interaction effects. Eleven two-way interaction terms were entered. They added 13% more explained variance, but this increment was not significant ($F(11,44) = 1.04$, ns), and thus we do not interpret this increment (cf. Allison, 1977). Furthermore, none of the t-tests for particular interactions were significant.

N. Predicting Fear

1. Main effects. The results of reduced model predicting block-level fear appear in Table 6. Demographics explain a significant 17% of the variation

Table 4 — Reduced Block-Level Model Predicting Police Calls for Crimes of Violence to Persons (%FCNBX): Means for Significant Interaction Terms

Interaction Between Real and Symbolic Barriers and Belonging to an Organization (FRONT23X X Q14AXX)

		Organization: Lo	Organization: Hi
Defensible Space	Lo	.12	.04
	Hi	.03	.02

Interaction Between Real and Symbolic Barriers and Territorial Responsibility (FRONT23X X TRNHMRPX)

		Responsibility: Lo	Responsibility: Hi
Defensible Space	Lo	.10	.06
	Hi	.03	.02

Interaction Between Belonging to an Organization and Territorial Responsibility (Q14AXX X TRNHMRPX)

		Responsibility: Lo	Responsibility: Hi
Organization	Lo	.10	.05
	Hi	.03	.03

Interaction Between Belonging to an Organization and Knowing the Neighborhood Name (Q14AXX X Q16XRES)

		Belonging to Organization: Lo	Belonging to Organization: Hi
Knowing Neighborhood Name	Lo	.12	.02
	Hi	.03	.04

Table 5

Test of the Reduced Block-Level Model:

Predicting Total Problems (TOTPROBX)

Cluster	Increment in R^2	F	Variable	R^2	t	B	Beta
Demographic	.20	F(2,60) = 7.44**	Q01X	.08	1.62	-.01	-.18
			HHRACEX	.12	2.14*	.11	.25
Defensible Space Features	.07	F(1,59) = 5.65*	FRONT23X	.07	-1.34	-.01	-.15
Territorial	.10	F(3,56) = 2.98*	BACK4X	.04	1.65	-.07	-.20
			TRNHMOTX	.03	1.59	-.06	-.18
			Q16XRES	.03	1.67	-.05	-.19

Note. * = $p < .05$; ** = $p < .01$; *** = $p < .001$. n = 63 blocks. Model I error term is used to test increment in R^2. T-tests are one-tailed.

Note. Determinant of matrix of predictors = .58; $x^2_h(15) = 51.16$, $p < .001$.

Total R^2 = .37 (F(6,56) = 5.46***)

Adjusted total R^2 = .30 (F(6,56) = 4.03**)

Note. All variables are block-level names.

TOTPROBX = total problems, with a higher score indicating a higher level of problems.

Q01X = length of residence, in months, at that address.

HHRACEX = household rare, 0 = white, 1 = non-white

FRONT23X = real and symbolic barriers in front with higher scores indicating more extensive boundaries.

BACK4X = gardening in back, with higher scores indicating more extensive, higher-demand gardening.

TRNHMOTX = ability to distinquish between insiders and strangers in near home territories, with higher scores indicating better ability.

Q16XRES = whether or not respondent knows neighborhood name.

0 = R does not know name or cannot supply it;

1 = does know it and can supply it. Variable has been residualized with respect to race, owner/renter status, trust in neighbors, and gardening in back.

Table 5 (Cont'd)

Table 6

Test of the Reduced Block-Level Model:

Predicting Fear (FEARX)

Cluster	Increment in R^2	F	Variable	R^2	t	B	Beta
Demographics	.17	$F(1,61) = 12.93$***	HHRACEX	.17	3.39**	.61	.36
Defensible Space	.08	$F(2,59) = 3.38$*	FRONT23X	.08	1.44	-.05	-.16
			FRONT1X	.00	< 1	.20	.07
Social	.12	$F(1,58) = 11.54$**	Q3CX	.12	2.59**	-1.00	-.28
Territorial	.051	$F(2,56) = 2.61$	Q16XRES	.03	2.04*	-.24	-.22
			TRNHMRPX	.02	1.51	-.18	-.17

Total $R^2 = .44$ ($F(6,56) = 7.19$***)
Adjusted Total $R^2 = .37$ ($F(6,56) = 5.59$***)

Note. * = $p < .05$; ** = $p < .01$; *** = $p < .001$. n = 63 blocks. T-tests are one-tailed. For increments in R^2 a Model I error term is used.

Note. Determinant of matrix of predictors = .57, $\chi^2_h(15) = 49.77$, $p < .001$

Note. All variables are block-level means.

FEARX = fear, with higher score representing more fear.

HHRACEX = household race, by observation, 0 = white, 1 = non-white

FRONT23X = real and symbolic barriers in front, with higher scores representing more extensive barriers.

FRONT1X = surveillance opportunities in front, with higher scores indicating more extensive opportunities.

Q3CX = proportion of addresses on the block where respondent knows somebody by face or name.

Q16XRES = does R know if neighborhood has a name; 0 = R does not know, or does not know what name is; 1 = R does know, and can supply name. Variable has been residualized with respect to race, owner/renter status, trust in neighbors, and gardening in back.

Table 6 (Cont'd)

in fear, and suggest that fear is lower on blocks of predominantly white residents. Defensible space variables provide an additional significant 8% of explained variance, and suggest that fear is lower on blocks where real and symbolic barriers in front are more prevalent. Social variables add an additional significant 12% of explained variance, and suggest that fear is lower on blocks where residents know, by face or name, a higher proportion of people who live on the block. Territorial variables add another 5% of explained variance, and the increment is not significant. The territorial variable concerned with knowing the neighborhood name is associated with a significant statistic, however, suggesting that fear is lower on blocks where more residents know the neighborhood name. In toto, the main effects (adjusted for shrinkage) explain a significant 37% of the variation in block-level fear.

2. Interaction effects. The two-way interactions explain an additional 9% of block level fear, but this increment was not significant ($F(13,44)<1$). Only one interaction term yielded a significant t-test.

O. Discussion

The results from our block-level analyses support the model of resident-based control which we outlined earlier. More widespread defensible space features, the presence of local social ties, and stronger territorial attitudes and behaviors, are repeatedly associated with higher levels of resident-based control. Defensible space features yielded significant semi-partial squared multiple correlations (increments in R^2) or t-ratios, in all three regressions, social variables in two out of three regressions, and territorial variables in two out of three regressions. Thus, we have been successful in identifying three clusters of features which are relevant to a broad range of control-related outcomes.

Over and above this straightforward model, some additional complications arise. On the regression predicting police calls for crimes of violence, several significant interactions emerged. These interactions suggested that the impact of social and territorial variables was conditional upon the level of real and symbolic barriers present, and that the joint impacts of social and territorial variables were complex. Thus, beyond the main effects observed, further impacts of particular clusters are effected by conditions in other clusters. Furthermore, several of these interactions are conceptually similar to ones obtained in our abstract picture task. (See Chapter 8). Such cross-method convergence would lead us to believe that these findings are stable. Thus, these interactions serve to highlight the utility of a broad, multidisciplinary perspective, and underline the limitations of more monochromatic models focusing on only one cluster of variables. Furthermore, the intertwining of these clusters of predictors would seem to add some validity that the three clusters are all relevant to the more general concept of informal control.

Predicting Individual-Level Outcomes

In this analysis all variables - predictors and outcomes alike - represent individual deviations from block means. Thus, a higher score means a person is higher than the block mean, and a lower score means a person is lower than the block mean. Of necessity then, these analyses are independent of the block-level analyses using block means. Pair-wise deletion of missing cases was used, and statistical tests were based on the variable with the smallest number of cases in a particular analysis. Variables were only allowed to enter as predictors if their zero-order correlation with the outcome was .10 or larger; i.e., the variable could potentially explain 1% of the variation in the outcome. The two outcomes we examined here are total problems and fear, as measured by surveys. The correlation between these two deviation-scored variables is .23.[5]

P. Predicting Fear

1. Main effects. The results of our reduced model designed to predict reported fear appear in Table 7. Demographics explain a significant 11% of the variation in fear. It appears that people who, relative to the block mean, are shorter-term residents, and who are male, feel less fear. The territorial variables explain an additional significant 3% of outcome variation, and suggest that people who feel more responsibility for home spaces, and who can better recognize those who belong in home spaces, experience less fear. In toto, the main effects explain a significant 14% of the variation in the outcome.

2. Interaction effects. The six two-way interactions which were entered added only an additional 1% of explained variance, and this increment was not significant.

Q. Predicting Problems

1. Main effects. The results of our attempt to predict perceived level of problems appear in Table 8. The demographic variable which enters explains a significant 3% of the variation in the outcome. Residents who, relative to the block as a whole, are less educated, perceive a lower level of problems. Social variables account for an additional (and statistically significant) 2% of explained variation. The t-tests suggest that those who, relative to the block as a whole, perceive themselves as more similar to coresidents, or who know fewer people on the block, perceive a lower level of problems. In toto, our model explains a significant 5% of the variation in problems.

2. Interaction effects. The two two way interactions accounted for less than 1% additional variance, and this increment was not significant.

R. Discussion

At the individual level - controlling for block climate - our model of resident-based control has some utility. Defensible space features were relevant to neither outcome, and territorial and social variables were each relevant to one outcome.

The territorial variables performed as expected in the fear regression. As perceived responsibility for home spaces such as front and back yard increases, and as ability to recognize those who belong in home spaces increased, fear lessened. That it was territorial attitudes toward home spaces, and not near home spaces (sidewalks, alley) that correlated with feeling a lack of safety about walking in the neighborhood, is at first blush a puzzling finding. But, consider that these home spaces are very central or important to residents' lives, due in part to the proximity of these spaces. (See also our

[5] Our "harder" outcomes based on Police Data of course represent block-level

Table 7

Test of the Individual-Level Model:

Predicting Fear (FEARZ)

Cluster	Increment in R^2	F	Variable	R^2	t	B	Beta
Demographic	.11	F(3,616) = 24.95***	Q01Z	.06	6.29***	.002	.25
			SEXZ	.05	5.06***	.64	.21
			Q59Z	.01	-1.40	-.03	-.06
Territorial	.03	F(2,614) = 11.94***	THOMRPZ	.02	-2.31*	-.19	-.10
			THOMOTZ	.01	-2.56**	-.27	-.11

Total R^2 = .14 (F(5,614) = 20.28***)

Adjusted Total R^2 = .14 (F(5,614) = 19.23***)

Note. * = p <.05; ** = p <.01; *** = p <.001. Significance tests based on 620 cases. Model I error term is used to test increment in R^2. T-tests are one-tailed.

Note. All variables are pooled within-block residuals; that is, deviation scores based on R's scores minus the block mean.
FEARZ = fear
Q01Z = length of residence, in months, at that address.
SEXZ = sex of respondent; 1 = male, 2 = female.
Q59Z = household income before taxes.
THOMRPZ = territorial responsibility for home territories, with higher scores indicating more responsibility.
THOMOTZ = ability to distinguish between insiders and strangers in home territories, with higher score indicating better ability.

Table 8

Test of the Individual Level Model:

Predicting Total Problems (TOTPROBZ)

Cluster	Increment in R^2	F	Variable	R^2	t	B	Beta
Demographic	.03	F(1,649) = 19.54***	Q55Z	.03	3.76***	.02	.15
Social	.02	F(2,647) = 7.48***	Q3CZ	.01	2.77**	.16	.11
			Q9Z	.01	-2.95**	-.08	-.12

Total R^2 = .05 (F(3,647) = 11.63***)

Adjusted Total R^2 = .05 (F(3,647) = 10.64***)

<u>Note</u>. ** = p <.01; *** = p <.001. Significance tests based on 651 cases. Model I error term is used to test increment in R^2. T-tests are one tailed.

<u>Note</u>. All variables are pooled within-block residuals; i.e., deviation scores based on R's score minus the block mean. TOTPROBZ = total problems in the neighborhood, with a higher score indicating more problems; Q55Z = years of education; Q3CZ = proportion of addresses on the block where R knows somebody, by face or by name; Q9Z = overall perceived similarity with other residents on the block.

discussion of centrality in Chapter 14.) Thus, disruption in these home spaces is psychologically a very serious event, and, we suggest, an event that residents use to estimate the larger neighborhood climate. That is, if the resident can't even recognize insiders and outsiders on his/her own private property, he/she feels there's no telling what might happen while walking alone in the neighborhood. Thus, territorial attitudes toward very central or important territories may serve as a basis for more generalized expectations about the residential environment.

The other cluster of variables in our model which turned out to be helpful at the individual level were the social variables. They were relevant to predicting total problems. In line with work by Rosenberg (1972, 1975) we found that as perceived similarity increases, problems decrease. Perceived homogeneity of local social climate is associated with a more smoothly functioning local ecology. (The role of a congenial social climate is examined more closely in Chapter 7.) The other social variable which entered the equation, however, did not perform according to the expectation of our model. As the proportion of households where someone is known to the respondent increased, so too did the level of perceived problems. Our expection has been that local ties, even weak ones such as acquaintanceship, would dampen problems and the like. This surprising result is discussed more fully in the next chapter.

General Discussion

Perhaps the clearest point to emerge from the results reported here is that at the block level our proposed model of resident-based control works. That is, each of the three clusters of predictors - defensible space features, social ties, and territoriability - was relevant to the majority of outcomes, and the clusters operated in the hypothesized fashion. More control went with more widespread defensible space features, stronger local ties, and stronger territorial attitudes and behavior.

Less anticipated was the fact that, (again at the block level) over and above the impacts of each separate cluster, the total configuration of clusters also appears important. This was revealed through the significant two-way interactions predicting police calls for crimes of violence. Thus, one clear conceptual task which lies ahead is to "unpack" the ways in which design, social, and territorial variables are interconnected in the residential environment. At present it appears that residents invest <u>either</u> in collective solutions such as organization <u>or</u> they develop individual strategies such as stronger territorial attitudes and behavior. If this were the case, it would be important to understand the relative efficacy of each strategy, and the decision that leads a block to adopting one or another stratagem.

Furthermore, our decision to focus on block-level events separately turned out, in empirical terms, to be a good decision. In a couple of instances variables that were relevant at the block level had slopes with opposite signs when pooled within - block residuals were examined. For example, at the block level increasing length of residence was associated with a lower level of problems in the full model regression (see Appendix D), while at the individual level it was associated with more fear. Also, increased local acquaintanceship

[5](Contd.) variables only. Hence, they cannot be addressed in the analyses which follow.

(Q3CX) was associated with less fear at the block level, while at the individual level this was associated with the perception of more problems. These divergences underscore the utility of separating out various levels of aggregation as described in Chapter 2.

When block-level and individual-level results are compared in the present study, the former appear much more satisfying. There could be three reasons underlying this superior performance. First, it could be that the theoretical model we have outlined really does work best at the collective level of a block or a housing project, and that it is only at this level that certain elements, such as defensible space features, are relevant. Alternatively, the relative success of our block-level models could be due to a high level of homogeneity in the Baltimore residential environment, on various parameters we have been discussing. The third possible explanation, of course, is that the clearer block-level results are an aggregation by-product. Means are inherently more stable than individual-level, single scores. And, the reduction in error variance results in better prediction. At this point, it is not clear what the superior block-level results should be attributed to, although we feel that the multidisciplinary theory we have been developing is in part responsible.

APPENDIX A

Police Data

Calls for Service Data and Part I Offenses

As explained in our chapter on method, we had broken our calls for service data down into seven categories. One rough test of the validity of the calls for service data, and of our coding scheme, would be to correlate Part I offense data with calls for service data. There are seven types of Part I offenses: (1) homicide, (2) forcible rape, (3) robbery, (4) aggravated assault, (5) burglary, (6) larceny, and (7) motor vehicle larceny. These crimes are defined in the Uniform Crime Reporting Handbook (FBI, 1978).

The intercorrelations of police call data and Part I offense data appear in Table A-1. During the two-year period, there were no criminal homicides on our 63 study blocks, and thus we do not show this Part I offense. In an effort to equalize variances, and thus limit the possibility of high correlations based simply on large variances, the data was transformed in two ways, using the square root transform, and the log transform.

The intercorrelations support our coding categories for police calls. For example, Part I aggravated assaults correlate most highly (.70) with calls for crimes of violence. The reverse also holds - calls for crimes of violence correlate most highly with Part I aggravated assaults. Also, Part I burglaries correlate most highly with calls for crimes against property in private spaces.

In addition, the intercorrelations suggest that police calls are clearly related to crime. Almost all of the correlations between police calls and Part I offenses are positive and significant. Even calls for miscellaneous events ("other") correlated strongly with five out of six Part I offenses. Thus, people call the police in part because there is crime in their area, and even when the call for police is unclassifiable, it's coming from a block where crime is considerable. These data,then, support the validity of our police calls data as a surrogate measure of crime. Police activity levels are strongly linked to actual crime levels.

Furthermore, the advantage of police calls as an outcome measure is the fact that police calls are more prevalent, and thus statistically speaking have larger variances than crime data.

Finally, a comment is in order regarding our decision to focus on calls for crimes of violence to persons, as an outcome. Research in the defensible space vein has focused largely on property crimes, such as burglary (cf. Waller and Okihiro, 1978; Newman and Franck, 1980; see also Chapter 2). Defensible space theory, however, is concerned in general with anti-social behavior and crime-related outcomes, and is not itself limited to proper crimes. And likewise, theories of informal social control and human territoriality are relevant to social control in general, and, at present, have not limited themselves to property crime. Thus, crimes of violence to persons are fully within the purlieu of all three of the theories which we are drawing on.

And, in our opinion, focusing on calls for crimes of violence to persons is much more theoretically exciting than focusing on property crime. The former are often thought of as more serious, and thus, if our theories can apply to such outcomes, they are more useful. We do not, however, wish to deny that defensible space theory, or any of the other theories, are relevant to other types of crime, such as burglary. In fact, defensible space features such as real and symbolic barriers in front were, in a reduced model regression, significantly associated with lower levels of police calls for crimes against property in private spaces. Thus, in the present study we sought to go beyond (not refute) the link, which has already been established, between defensible space features and burglary, to tackle more serious outcomes.

Table A-1

Correlations Between Police Calls for Service Data, and Part I Data

Part I Offenses

Calls for Service	(2) Forcible Rape	(3) Robbery	(4) Aggravated Assault	(5) Burglary	(6) Larceny	(7) Motor Vehicle Larceny
Crime Against Property in Private Spaces (ACFS)	.04 (.04) .05	.31 (.33) .33	.47 (.49) .51	.53 (.50) .50	.54 (.57) .57	.10 (.10) .13
Crime Against Property in Public Spaces (BCFS)	.08 (.06) .08	.46 (.51) .51	.33 (.38) .38	.20 (.31) .31	.42 (.49) .49	.53 (.46) .50
Social Nuisances (CCFS)	.52 (.38) .31	.39 (.33) .31	.51 (.55) .52	.26 (.35) .40	.16 (.26) .27	.40 (.34) .33
Physical Complaints (DCFS)	.32 (.38) .38	-.11 (-.13) -.13	-.14 (-.07) -.08	.05 (.13) .12	.17 (.20) .25	.02 (.06) .06
Accidents (ECFS)	-.01 (.08) .10	.13 (.25) .29	.30 (.37) .40	.01 (.10) .13	.40 (.49) .50	-.03 (-.07) -.05
Crimes of Violence to Persons (FCFS)	.45 (.28) .25	.49 (.48) .49	.68 (.69) .70	.24 (.31) .35	.30 (.27) .26	.38 (.31) .33
Other	.52 (.40) .28	.45 (.50) .43	.50 (.52) .48	.26 (.38) .40	.39 (.47) .49	.29 (.16) .12

Table A-1

(continued)

Note. Correlations are first-order partials of raw data, in which number of occupied households per block is the variable controlled for. Part I offenses which are criminal homicides are not included, since none of these occurred. Part I data comes from calendar years 1978 plus 1979, and calls for service data comes from calendar year 1978.

Note. Correlations in parentheses are based on data which was transformed using a square root operation. Underlined correlations are based on data that was transformed using a log transform. These transforms were carried out in an effort to equalize variances, since on the raw data some variables had very small variances which restricted their ability to intercorrelate.

Note. $n = 63$ blocks. rs $\geq .25$ are significant at $p < .05$; rs $\geq .32$ are significant at $p < .01$; rs $\geq .41$ are significant at $p < .001$.

APPENDIX B

Comments on the Problem of Multicollinearity

In our block-level analyses, we were plagued with the problem of multi-collinearity. The problem was present to a lesser degree in an individual-level analyses. Multi-collinearity is a condition which is present, to some degree, in any matrix of predictors that is not completely orthogonal. The condition has been discussed extensively by sociologists and econometricians (Blalock, 1963; Gordon, 1968; Haitovsky, 1969; Kmenta, 1971, pp. 380-391; Maddala, 1977, pp. 183-199; Rockwell, 1975). Multi-collinearity is a cause for concern on several counts. As multi-collinearity increases, the determinant of the matrix approaches zero and, ultimately, it is impossible to identify one single inverse of the correlation matrix. As multi-collinearity increases, predictors of necessity become more redundant with one another, and this in turn results in larger variances (and thus standard errors) of B and Beta weights of predictors. As these standard errors increase, predictors in a regression are less likely to yield a significant t-test. On a somewhat more subtle level, as multi-collinearity among predictors increases, an increasing number of predictors are fighting to eat up the same sized pie (i.e., explained variance), the result being that each variable gets a smaller piece. In some cases "tipping" (Gordon, 1968) can occur, with the whole piece going unfairly to one variable. Thus, the problems caused by multi-collinearity are manifold.

Although all agree that multi-collinearity may be a very serious problem, Blalock (1963) and Tukey (1951) suggest that it may be fundamentally unsolvable.

Some strategies for attempting to solve the problem include the following: (1) A principal components analysis of predictors can be carried out thereby creating fewer, and more orthogonal predictors. Principal components analysis can be carried out either on an entire set of predictors at once, or on separate theoretical clusters. In the former case one is likely to have very complex and hard-to-understand factors. In the latter case one may still have correlation between sets of predictors despite orthogonality within clusters of predictors. (2) One can examine "R^2 deletes," that is, if one variable were removed from a complete regression, how much would the R^2 drop? If an R^2 delete is very small, it suggests that little is lost by removing that variable, and thus that the variable is redundant. Unfortunately, few regression programs generate R^2 deletes. Thus, to obtain an R^2 delete for each variable, the researcher must add that variable at the last step in a regression. (3) A third approach is to seek to reduce the redundancy among the matrix of predictors (cf. Gordon, 1968; Rockwell, 1975). This can be achieved by inverting the matrix of predictors and examining the diagonal elements (C_{ii}). The squared multiple correlation (SMC) of a predictor with other predictors, i.e., the amount of that predictor already explained by other predictors, can be expressed as follows: SMC = $(1 \div (1 - C_{ii}))$. Thus to reduce redundancy one simply starts eliminating the variables with the largest C_{ii}s. Although this procedure may seem wooden-headed because the researcher may find some of his favorite variables excluded, it does make sense. The idea is to have the broadest net of predictors with the fewest variables. One problem with this procedure of successive elimination is deciding when to stop. How does one know when enough redundancy has been eliminated from the matrix? (4) Fortunately a guideline for such elimination is provided by the Haitovsky (1969) test. This is a chi-square heuristic test that can apply to the determinant of the matrix of predictors to test the hypothesis that the matrix is not singular, and thus capable of being easily inverted. If the chi-square is significant, then the null hypothesis that the matrix is singular is rejected. Rockwell (1975) has suggested that the Haitovsky test should be routinely applied in regression problems, and that only matrices which fail this test be labelled multi-collinear. The formula for the Haitovsky test is $\chi^2_1(v) = k \log_e (1-|X^T X|)$ where p = the number of variables. N = sample size, $K = \{(1 + |(2p+5)/6|)-N\}$ and $V = (p(p-1))/2$ degrees of freedom. The Haitovsky test has its limitations (cf. Maddala, 1977), but it is nonetheless systematic, and provides a very clear guideline for deciding when to stop eliminating procedures.

In the present effort we evaluated the problem of multi-collinearity from several different angles, especially in the block-level analyses. Principal components analysis of predictors yielded very complex and hard-to-label factors, and thus we did not further pursue that route. The most successful tactic we pursued was to eliminate redundant predictors until the matrix of predictors passed the Haitovsky test at a probability of less than .001. Thus, the chance that a matrix was multi-collinear was less than one in a thousand. Matrices which passed this test usually had SMCs among predictors of less than .33, and diagonals (C_{iis}) of less than 1.5. In one case we deleted a variable based on R^2 delete. Deletion of the variable reduced the total R^2 by only .004.

It is instructive to compare the "full" model regression results based on multi-collinear matrices, which are presented in Appendix D, with the reduced non-multicollinear results presented in the chapter. There is really not so very much difference. The reduced models tell the same story, but only more clearly.

By eliminating multi-collinearity from our predictors we hope that we have produced regression with very reliable and stable B and Beta weights. Thus, with our reduced models, the elements of the regression such as t-tests and Beta weights are more substantial and worthy of interpretation than they would have been otherwise.

APPENDIX C

Scale Properties

Our regression analyses include several variables which really are scales. In this appendix, we present some data about each of these scales; in particular, inter-item correlations and coefficients of internal consistency or reliability. The reliability statistics we present is Cronbach's Alpha (Stanley, 1971).

Outcome Scales

A. Total Problems (TOTPROB)

Our measure of total problems or nuisances was an 11-item scale, based in part on items used by Skogan (1978) in their Reactions to Crime Project. The inter-item correlations appear in Table C-1. Coefficient Alpha for this scale was .84, and the average inter-item correlation was .33.

B. Fear

Our fear outcome scale was based on two standard items used in the Uniform Crime Survey. The items and their intercorrelation appear in Table C-2. Coefficient Alpha for this scale was .64.

Predictors

Most of our predictor scales were developed based upon replicated principal components analyses of Survey I data. These results are presented in Taylor, Gottfredson, Brower, Drain, and Dockett (1980).

C. Watching Property for Neighbors Scale (SOCNBR)

This three-item scale measured how much the respondent had actually relied on co-residents in the past for watching property while away. The average inter-item correlation was .44, and coefficient Alpha was .70. The inter-item correlations appear in Table C-3.

D. Territorial Attitudes: Problems in Home Spaces (TRHOMPRB)

This eight-item scale is concerned with problems related to a lack of control, in home spaces such as property in front (porch, yard), and back yard. The average inter-item correlation for the scale was .38, and coefficient Alpha was .83. Inter-item correlations appear in Table C-4.

E. Territorial Attitudes: Distinguishing Between Insiders and Strangers in Near Home Spaces (TRNHMOUT)

This six-item scale is concerned with recognizing insiders, and with interaction, in near home spaces such as sidewalk in front of the house and alley behind the house. The average inter-item correlation was .38, and coefficient Alpha was .78. The inter-item correlations appear in Table C-8.

F. Territorial Attitudes: Responsibility in Near Home Spaces (TRNHMRSP)

This four-item scale is concerned with responsibility for what goes on in near-home spaces such as sidewalk in front of the house and alley behind the house. Average inter-item correlation is .54, and coefficient Alpha is .82. The inter-item correlations appear in Table C-9.

G. Defensible Space Features: Real and Symbolic Barriers in Front (FRONT23)

This two-item scale, based on ratings of site-level photographs, is concerned with real and symbolic barriers on the front of the housing unit. Coefficient Alpha and this scale is .92. The inter-item correlation appears in Table C-10.

Table C-1

Inter-Item Correlations for Total Problems Scale

		Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30	Q31	Q32
Q22	Troublemakers hanging around?	1.00										
Q23	Neighbors not getting along?	.27	1.00									
Q24	Excessive drinking of alcohol in public places?	.42	.35	1.00								
Q25	People who say insulting things or bother people as they walk down the street?	.42	.37	.42	1.00							
Q26	Bad elements moving into the neighborhood?	.33	.40	.36	.35	1.00						
Q27	People who are unpredictable and would do just about anything?	.32	.30	.37	.47	.43	1.00					
Q28	Crime or fear of crime?	.38	.20	.40	.39	.35	.34	1.00				
Q29	Kids or adults trespassing in people's yards?	.30	.16	.25	.24	.22	.22	.27	1.00			
Q30	People fighting?	.38	.38	.39	.44	.35	.40	.31	.25	1.00		
Q31	People damaging the cars or property of others?	.38	.17	.34	.29	.28	.24	.40	.33	.24	1.00	
Q32	People using drugs in public places, like streets and playgrounds?	.35	.21	.50	.33	.30	.43	.39	.28	.42	.32	1.00

Note: For each item, respondents were asked "In your neighborhood, how much of a problem is________?"

To answer, they chose one of the following responses: a big problem, somewhat of a problem, or not a problem.

Table C-2

Inter-Item Correlations for Fear Scale (FEAR)

	Q45	Q46
Q45 How safe do you feel or would you feel being out alone in your neighborhood during the day?	1.00	
Q46 How about at night -- how safe do you feel or would you feel being out alone in your neighborhood at night?	.52	1.00

Note: For each question, respondents picked an answer from a four category Likert scale whose endpoints were "Very safe" and "Very unsafe."

Table C-3

Inter-Item Correlations for Helping Neighbor Scale (SOCNBR)

		Q35F	Q35H	Q35J
Q35F	Have a neighbor keep a watch on your house or apartment?	1.00		
Q35H	Have a neighbor bring in newspapers or mail?	.45	1.00	
Q35J	Give a key to a neighbor so he/she can go in and check the place once in awhile?	.41	.47	1.00

Note: For each item, respondents simply indicated if they had done this in the past with co-residents on the block.

Table C-4

Inter-Item Correlations: Problems in Home Spaces (TRHOMPRB)

		Q49C	Q49I	Q49K	Q49L	Q53C	Q53I	Q53K	Q53L
Q49C	Troublemakers hang around (property in front)	1.00							
Q49I	People who use this space abuse it (property in front)	.58	1.00						
Q49K	I'm likely to be bothered by undesirables (property in front)	.52	.58	1.00					
Q49L	There's a lot of vandalism (property in front)	.54	.50	.49	1.00				
Q53C	Troublemakers hang around (property behind)	.34	.20	.18	.28	1.00			
Q53I	People who use this space abuse it (property behind)	.29	.27	.20	.31	.51	1.00		
Q53K	I'm likely to be bothered by undesirables (property behind)	.22	.27	.41	.24	.43	.42	1.00	
Q53L	There's a lot of vandalism (property behind)	.30	.24	.25	.42	.57	.61	.51	1.00

Note: For each statement, respondents chose an answer from a six category Likert scale, whose endpoints were "Disagree strongly" and "Agree strongly".

Distinguishing Strangers and Outsiders in Home Spaces (TRHOMOUT)

		Q49D	Q49F	Q49H	Q53D	Q53F	Q53H
Q49D	I can tell people who belong there from outsiders (property in front)	1.00					
Q49F	If suspicious person is hanging around, someone is bound to call the police (property in front)	.55	1.00				
Q49H	I see mostly people I know there. (property in front)	.76	.56	1.00			
Q53D	I can tell people who belong there from outsiders (property behind)	.22	.08	.20	1.00		
Q53F	If suspicious person is hanging around, someone is bound to call police (property behind)	.21	.38	.18	.37	1.00	
Q53H	I see mostly people I know there (property behind)	.24	.17	.23	.59	.39	1.00

Note: For each statement, respondents picked one answer from a six category Likert scale whose endpoints were "Disagree strongly" and "Agree strongly."

Table C-6

Inter-Item Correlations: Responsibility in Home Spaces (TRHOMRSP)

		Q49G	Q49N	Q53G	Q53N
Q49G	I feel personally responsible for what goes on (property in front)	1.00			
Q49N	I feel some responsibility as a member of the neighborhood for what goes on (property in front)	.71	1.00		
Q53G	I feel personally responsible for what goes on (property behind)	.37	.29	1.00	
Q53N	I feel some responsibility as a member of the neighborhood for what goes on (property behind)	.29	.29	.65	1.00

Note: For each statement, respondents picked one answer from a six category Likert scale, whose endpoints were "Disagree strongly" and "Agree strongly."

Table C-7

Inter-Item Correlations: Problems in Near Home Spaces (TRNHMPRB)

		Q52C	Q52I	Q52K	Q52L	Q50C	Q50I	Q50K	Q50L
Q52C	Troublemakers hang around (sidewalk in front)	1.00							
Q52I	People who use this space abuse it (sidewalk in front)	.46	1.00						
Q52K	I'm likely to be bothered by undesirables (sidewalk in front)	.46	.44	1.00					
Q52L	There's a lot of vandalism (sidewalk in front)	.49	.54	.49	1.00				
Q50C	Troublemakers hang around (alley behind)	.34	.25	.28	.25	1.00			
Q50I	People who use this space abuse it (alley behind)	.19	.31	.25	.17	.58	1.00		
Q50K	I'm likely to be bothered by undesirables (alley behind)	.24	.22	.33	.24	.59	.58	1.00	
Q50L	There's a lot of vandalism (alley behind)	.22	.22	.29	.31	.61	.66	.60	1.00

Note: For each statement, respondents picked one answer from a six category Likert scale, whose endpoints were "Disagree strongly" and "Agree strongly."

able C-8

Inter-Item Correlations: Distinguishing Insiders and Strangers in Near Home Spaces (TRNHMOUT)

		Q52D	Q52F	Q52H	Q50D	Q50F	Q50H
Q52D	I can tell people who belong there from outsiders (sidewalk in front)	1.00					
Q52F	If a suspicious person is hanging around, someone is bound to call the police (sidewalk in front)	.30	1.00				
Q52H	I see mostly people I know there (sidewalk in front)	.53	.25	1.00			
Q50D	I can tell people who belong there from outsiders (alley behind)	.39	.16	.35	1.00		
Q50F	If a suspicious person is hanging around, someone is bound to call the police (alley behind)	.26	.59	.28	.54	1.00	
Q50H	I can tell people who belong there from outsiders (alley behind)	.31	.16	.46	.67	.47	1.00

Note: For each statement, respondents picked one answer from a six category Likert scale, whose endpoints were "Disagree strongly" and "Agree strongly."

Table C-9

Inter-Item Correlations: Responsibility in Near Home Spaces (TRNHMRSP)

		Q52G	Q52N	Q50G	Q50N
Q52G	I feel personally responsible for what goes on (sidewalk in front)	1.00			
Q52N	I feel some responsbility as a member of the neighborhood for what goes on (sidewalk in front)	.72	1.00		
Q50G	I feel personally responsible for what goes on (alley behind)	.50	.45	1.00	
Q50N	I feel some responsibility as a member of the neighborhood for what goes on (alley behind)	.42	.47	.69	1.00

Note: For each statement, respondents picked one answer from a six category Likert scale, whose endpoints were "Disagree strongly" and "Agree strongly."

Table C-10

Inter-Item Correlations: Real and Symbolic Barriers in Front (FRONT23)

		FRONT2	FRONT3
FRONT2	There is a clear boundary between the property and the sidewalk (symbolic barrier)	1.00	
FRONT3	There is a barrier that restricts and directs access from the sidewalk (real barrier)	.90	1.00

Note: Each slide was rated,on each five category scale, by two raters. Scores averaged across raters were used to compute this inter-item correlation.

Appendix D

Additional Tables for Regression Analyses

In this appendix we present some supplementary data relevant to the regressions presented in the chapter. Specifically, for each regression we present the following: the full intercorrelation matrix of each predictor that has a significant correlation with the outcome; the regression analyses based on this full set of predictors, and the univariate R^2 associated with each reduced cluster of predictors. The last table indicates how much of the outcome a cluster can explain when it is entered on the first step of a regression. When the univariate R^2 is compared with the increment in R^2 associated with each cluster in the hierarchical reduced regressions, the difference represents the overlap between that cluster and the clusters entered on earlier steps in the regression. Throughout, a "full" model refers to a set of predictors which are not multicollinear.

Block Level

A. Police Calls for Crimes of Violence

The intercorrelation for the full block level model appears in Table B-1. It is interesting to note that the only demographic variable relevant to police calls is owner/rent status, with fewer calls on blocks where there are more owners. The correlations of defensible space, social, and territorial variables, with police calls are all roughly of the same magnitude, $|.25|$ to $|.30|$.

The results of the full, block-level regression appear in Table D-2. Only demographics provide a significant increment in R^2. The only significant t-ratio is associated with knowing the neighborhood name, suggesting that police calls are lower on blocks where more residents know the neighborhood name.

The univariate R^2 associated with the social and territorial clusters in the reduced model, appear in Table D-3. The results suggest that, ignoring other variables, the social cluster can explain 9% of the variation in police calls; and the territorial variables, ignoring other variables, can explain 18% of the variation in police calls.

B. Total Problems (TOTPROBX)

The intercorrelations for the full block-level model predicting total problems appear in Table D-4. It is interesting to note that the best zero-order predictor of problems is gardening in back (BACK4X, $r = -.39$), with people gardening less on blocks where there are fewer problems. It is also interesting to note that blocks where homeownership (Q02X) is higher are also those blocks where gardening in back is higher ($r = .62$). Finally, it is interesting to note that none of our social network variables yield a significant zero-order correlation.

The results of the regression analysis based on the full model appear in Table D-5. Demographic, defensible space, and territorial variables all provide a significant increment in explained outcome variance. The significant t-ratios suggest that problems are lower on: blocks with a more stable, white population, where residents garden in back, and can distinguish between insiders and strangers.

The univariate R^2s associated with the defensible space and territorial clusters appear in Table D-6. Ignoring other variables, territorial variables alone can explain over 25% of the variation in block-level problems.

C. Fear (FEARX)

The correlation matrix for the full block-level model predicting fear appears in Table D-7. The largest zero-order predictor of fear is trust in neighbors (SOCNBRX). Blocks where respondents rely more heavily on co-residents for property-watching duties are blocks with lower fear levels ($r = .50$).

The results of the full regression appear in Table D-8. Demographics and social variables explain a significant amount of outcome variation. The amount added by the social variables, 19%, is quite sizable.

Univariate R^2s appear in Table D-9. We see that if we considered just the social variables, or considered just the territorial variables, they could each explain about the same amount of variation in the outcome.

Individual Level

At the individual level, we make no distinction between full and reduced models, since the full matrices of predictors were not collinear.

D. Predicting Total Problems (TOTPRBZ)

The correlation matrix for predicting total problems appears in Table D-10. The criterion has the largest zero-order correlation with education (.17): people who, relative to their blocks, are more educated, perceive more problems, relative to others on the block.

The univariate R^2 for the social cluster appears in Table D-11. It is almost identical to the increment in R^2 presented in the regression analysis. This is not surprising since the matrix of predictors is very close to being orthogonal.

E. Predicting Fear (FEARZ)

The matrix of intercorrelations for the fear regression appears in Table D-12. The best zero-order predictor of fear is length of residence (Q01Z,$r = .23$). Residents who have lived on the block longer than their co-residents feel more fear than their co-residents. Note that this relationship, conceptually, is opposite the effect for length of residence in the full block-level regression predicting total problems. The univariate R^2 for the territorial cluster appears in Table D-13. Again, it is almost the same as the effect shown in the regression analysis with all the variables, due to the orthogonality of the predictors.

Table D-1

Full Block-Level Model:

Intercorrelation Matrix for Police Calls for Crimes of Violence ($FCNBX)

	1	2	3	4	5	6	7
1. $FCNBX	1.00						
2. Q02X	- .29	1.00					
3. FRONT23X	- .26	.33	1.00				
4. Q14AXX	- .30	.42	.02	1.00			
5. TRNHMPBX	.28	- .33	- .37	- .14	1.00		
6. TRNHMRPX	- .25	.28	.07	.28	- .34	1.00	
7. Q16XRES	- .28	.00	.30	.12	- .20	- .20	1.00

Note: n = 63 blocks. Correlations $>.25$ are significant at $p<.05$.

Note; Determinant of matrix of predictors = .37; χ^2_h (15) = 27.12, $p<.05$.

Table D-1 (Cont'd)

<u>Note</u>. All variables are block means.

<u>Note</u>. $FCNBX = log of police calls for crimes of violence to persons, per occupied household. One (1) was added to all unlogged counts, since log of zero is undefined.

Q02X = owner/renter status: 0 = rental status, 1 = owner status

FRONT23X = real and symbolic barriers in front, with higher scores indicating more extensive barriers.

Q14AXX = respondent belongs to a local organization which other people on block also belong to; 2 = R does belong, 1 = R does not belong.

TRNHMPBX = problems experienced in near home spaces (sidewalk, alley) with a higher score indicating more problems experienced.

TRNHMRPX = territorial responsibility toward near home spaces, with higher score indicating more responsibility.

Q16XRES = does R know if neighborhood has a name; 0 = R does not know, or does not know what name is; 1 = R does know and can supply name. Variable has been residualized with respect to block means on race, trust in neighbors, woner/renter status, and gardening in back

TABLE D-2

Test of the Full Block-Level Model:

Predicting Police Activity Relevant to

Crimes of Violence Against Persons (%FCNBX)

Cluster	Increment in R^2	F	Variable	R^2	t	B	Beta
Demographic	.08	$F(1,61) = 5.64$*	Q02X	.08	<1	-.03	-.11
Defensible Space	.03	$F(1,60) = 2.01$	FRONT23X	.03	<1	.00	-.11
Social	.05	$F(1,59) = 3.51$	Q14AXX	.05	1.15	-.06	-.16
Territorial	.08	$F(3,56) = 2.01$	Q16XRES	.04	1.93*	-.03	-.25
			TRNHMPBX	.01	<1	.01	.06
			TRNHMRPX	.03	1.51	-.03	-.20

Total $R^2 = .25$ $F(6,56) = 3.05$*

Adjusted Total $R^2 = .17$ $F(6,56) = 1.85$

Note: * = $p < .05$; n = 63 blocks

TABLE D-3

Univariate Relationship in Reduced Block-Level Model:

Police Activity Relevant to Crimes of Violence Against Persons (ØFCNBX)

Cluster	Univariate R^2	F for Cluster	Variable	R^2	t	B	Beta
Social	.09	F(1,61) = 6.09*	Q14AXX	.09	-2.47**	-.11	-.30
Territorial	.18	F(2,60) = 6.45**	Q16XRES	.08	-2.86**	-.04	-.34
			TRNHMRPX	.10	-2.71**	-.04	-.32

Note. * = $p < .05$; ** = $p < .01$; n = 63 blocks.

Table D-4

Intercorrelations of Predictors and Criterion

Block-Level Problems (TOTPROBX)

		1	2	3	4	5	6	7	8
1	TOTPROBX	1.00							
2	Q01X	-.29	1.00						
3	Q02X	-.33	.26	1.00					
4	HHRACEX	.37	-.10	-.45	1.00				
5	FRONT23X	-.29	.00	.33	-.07	1.00			
6	TRNHMOTX	-.29	.32	.31	.02	.06	1.00		
7	BACK4X	-.39	.03	.62	-.42	.24	.20	1.00	
8	Q16XRES	-.25	.08	.00	.00	.30	-.01	.00	1.00

Note: Determinant of correlation matrix of predictors = .19. n = 63 blocks.

Correlations greater than .25 are significant at $p < .05$.

Note: $\chi^2_n (21) = 12.40$, ns

Table D-4
(continued)

Note. All variables are block-level means

Q01X	=	length of residence, in months, in present home
Q02X	=	owner vs. renter status; 0 = renter, 1 = owner
HHRACEX	=	household race by observation; 0 = white, 1 = non-white
FRONT23X	=	Real and symbolic barriers in front, with higher scores indicating more extensive barriers
TRNHMOTX	=	ability to distinquish between insiders and strangers, in near home spaces; higher scores indicate more ability to make distinction
Q16XRES	=	does R know neighborhood name, 0 = R does not know, or cannot supply name; 1 = R does know and can supply name. Variable has been residualized with respect to owner/renter status, race, gardening, and trust in neighbors.
TOTPROBX	=	total problems; higher score indicates more problems

Table D-5

Test of the Full Block-Level Model:

Predicting Total Problems: (TOPPROBX)

Cluster	Increment in R^2	F	Variable	R^2	t	B	Beta
Demographics	.22	$F(3,59) = 5.40$ **	QQ1X	.08	- 1.80 *	- .01	- .21
			QQ2X	.07	< 1	.09	.14
			HHRACEX	.06	2.31 *	.13	.29
Defensible Space Features	.05	$F(1,58) = 4.36$ *	FRONT23X	.05	1.55	-.01	-.19
Territorial	.11	$F(3,55) = 3.20$ *	Q16XRES	.03	1.55	-.05	-.18
			TRNHMOTX	.04	1.74 *	-.07	-.21
			BACK4X	.04	1.88 *	-.09	-.27

Total $R^2 = .38$ ($F(7,55) = 4.79$ ***)

Adjusted Total $R^2 = .30$ ($F(7,55) = 3.36$ **)

Note: * = $p < .05$; ** = $p < .01$; *** = $p < .001$. n = 63 blocks. T -tests are one-tailed. Model I error term is used to test for increment in R^2.

Table D-6

Univariate Relationship in Reduced Block-Level Model:

Total Problems (TOTPROBX)

Cluster	Univariate R^2	F for Cluster	Variable	R^2	t	B	Beta
Defensible Space	.08	$F(1,61) = 5.45^*$	FRONT23X	.08	- 2.34*	- .02	- .29
Territorial	.26	$F(3,59) = 6.88^{***}$	BACK4X TRNHMOTX Q16XRES	.15 .05 .06	- 3.02*** - 1.93* - 2.21*	- .12 - .07 - .07	- .35 - .22 - .25

Note. * = $p < .05$; ** $p < .01$; *** = $p < .001$; n = 63 blocks. T-tests are one tailed.

Table D-7

Intercorrelations of Predictors and Criterion:

Block-Level Fear (FEARX)

	1	2	3	4	5	6	7	8	9	10
1. FEARX	1.00									
2. Q02X	-.32	1.00								
3. HHRACEX	.42	-.45	1.00							
4. FRONT23X	-.31	.33	-.07	1.00						
5. FRONT1X	.27	-.30	.28	-.36	1.00					
6. Q3CX	-.41	.26	-.10	.07	-.03	1.00				
7. SOCNBRX	.50	-.37	.38	.02	.30	-.42	1.00			
8. TRNHMRPX	-.25	.28	.00	.07	-.08	.38	-.21	1.00		
9. BACK4X	-.33	.62	-.42	.24	-.38	.28	-.48	.23	1.00	
10. Q16XRES	-.25	.00	.00	.30	-.06	.04	.00	-.20	.00	1.00

Note. Determinant of correlation matrix of predictors = .06. N = 63 blocks.

Correlations greater than .25 are significant at $p < .05$.

Note. χ_n^2 (45) = 3.58, ns, for matrix of predictors

Table D-7
(continued)

Note. All variables are block-level means.

FEARX	=	fear, with higher score representing more fear
Q02X	=	owner vs. renter status; 0 = return, 1 - owner
HHRACEX	=	household race, by observation; 0 = white, 1 = non-white
FRONT23X	=	real and symbolic barriers in front, with higher scores representing more extensive barriers
FRONT1X	=	surveillance opportunities in front, with higher scores indicating more extensive surveillance opportunities
Q3C	=	proportion of addresses on block where respondent knows somebody by face or name
SOCNBRX	=	trust in neighbors to look after property, with a higher score representing less trust
TRNHMRPX	=	territorial responsibility toward near home spaces, with higher score indicating more responsibility
BACK4X	=	level of gardening in back, with higher score indicating more gardening
Q16XRES	=	Does R know if neighborhood has a name; 0 = R does not know, or does not know what name is; 1 = R does know, and can supply name. Variable has been residualized with respect to owner/renter status, race, trust in neighbors, and gardening in back.

Table D-8

Test of the Full Block-Level Model:

Predicting Fear (FEARX)

Cluster	Univariate R^2	F for Cluster	Variable	R^2	t	B	Beta
Demographic	.20	F(2,60) = 7.38**	Q01X	.10	< 1	.20	.08
			HHRACEX	.09	2.66**	.54	.32
Defensible Space	.07	F(2,58) = 2.56	FRONT23X	.06	-2.08*	-.08	-.25
			FRONT1X	.00	< 1	-.01	.00
Social	.19	F(3,55) = 6.43***	Q3CX	.12	-1.60	-.68	-.19
			SOCNBRX	.07	2.61**	1.38	.35
			Q14AXX	.00	<1	.16	.05
Territorial	.05	F(3,52) = 1.77	Q16XRES	.03	-1.96*	-.23	-.21
			TRNHMRPX	.02	1.59	-.20	-.18
			BACK4X	.00	< 1	.07	.05

Total R^2 = .50 (F(10,52) = 5.29***)

Adjusted Total R^2 = .41 (F(10,52) = 3.60**)

Note. * = p < .05; ** = p < .01; *** = p < .001. n = 63 blocks. A Model I error term is used.

T-tests are one tailed.

Univariate Relationship in Reduced Block-Level Model:

Fear (FEARX)

Cluster	Univariate R^2	F for Cluster	Variable	R^2	t	B	Beta
Defensible Space	.12	$F(2,60) = 4.27$*	FRONT23X	.10	-1.92*	-.08	-.25
			FRONT1X	.03	1.35	.49	.18
Social	.17	$F(1,61) = 12.15$***	Q3CX	.17	-3.49***	-1.44	-.41
Territorial	.16	$F(2,60) = 5.60$**	TRNHMRPX	.06	-2.59**	-.34	-.31
			Q16XRES	.10	-2.60**	-.34	-.32

Note. * = $p < .05$; ** = $p < .01$; *** $p < .001$. $n = 63$ blocks. T-tests are one-tailed.

Note. All variables are block-level means.

FEARX = fear, with higher score indicating more fear
FRONT23X = real and symbolic barriers in front, with higher scores indicating more extensive barriers
FRONT1X = surveillance opportunities in front, with higher scores indicating more surveillance opportunities
Q3CX = proportion of addresses on the block where R knows somebody by face or name
TRNHMRPX = territorial responsibility over near home spaces, with higher score indicating more responsibility
Q16XRES = does R know if neighborhood has a name; 0 = R does not know, or cannot supply name; 1 = R does know and can supply name. Variable has been residualized with respect to several demographics

Table D-10

Individual-Level Model: Correlation Matrix for

Total Problems (TOTPRBZ)

	1	2	3	4
1. TOTPRBZ	1.00			
2. Q55Z	.17	1.00		
3. Q3CZ	.11	.10	1.00	
4. Q9Z	-.12	-.09	.14	1.00

Note. Determinant of matrix of predictors = .96 . χ^2_n (3) = 2066, $p < .001$.

Note. All variables are individual-level measures which have been residualised with respect to the appropriate block mean. TOTPRBZ = total problems, with a higher score indicating more problems; Q55Z = years of education; Q3CZ = proportion of addresses on the block where the respondent knows somebody by face or name; Q9Z = overall perceived similarity with other people on the block, and a higher score indicates more similarity.

Table D-11

Individual-Level Model: Univariate R^2 for Total Problems (TOTPRBZ)

Cluster	Univariate R^2	F for Cluster	Variable	R^2	t	B	Beta
Social	.03	$F(2,647) = 9.77$***	Q3CZZ	.01	3.25***	.19	.13
			Q9ZZ	.02	3.43***	-.09	-.13

Note. *** = $p < .001$. T-tests are one-tailed.

Table D-12

Individual-Level Model: Correlation Matrix for

Fear (FEARZ)

	1	2	3	4	5	6
1. FEARZ	1.00					
2. Q01Z	.23	1.00				
3. SEXZ	.21	.00	1.00			
4. Q59Z	-.15	-.05	-.24	1.00		
5. THOMRPZ	-.14	.08	.02	.20	1.00	
6. THOMOTZ	-.12	.13	.05	.07	.46	1.00

Note. Determinant of matrix = .21, $\chi^2_n(10) = 149$, $p < .001$.

Note. All variables are individual-level measures which have been residualised with respect to the appropriate block mean. FEARZ = fear, with a higher score indicating more fear; Q01Z = length of residence in the household, measured in months; SEXZ = sex of respondent, 0 = male, 1 = female; Q59Z = income for household; THOMRPZ = territorial responsibility for homespaces, such as property in front and back yard, with a higher score indicating more responsibility; THOMOTZ = ability to distinguish between insiders and strangers in home spaces, with a higher score indicating better ability.

Table D-13

Individual-Level Model:

Univariate R^2 for Fear (FEARZ)

Cluster	Univariate R^2	F for Cluster	Variable	R^2	t	B	Beta
Territorial	.03	$F(2,673)=8.66$***	TRHOMRPZ	.02	-2.59***	-.20	-.11
			TRHOMOTZ	.00	-1.69*	-.17	-.07

Note. * = $p < .05$; *** = $p < .001$. T-tests are one-tailed.

Appendix E

Some Comments on Regression: Hierarchical Step-Wise Procedures, and Testing for Interaction

In this appendix, we wish to specify some assumptions underlying our regression analyses. In particular, we explain the rationale behind hierarchical stepwise regression, and the ordering of clusters of variables as we specified them in our equation. We also briefly discuss our procedures for testing for interactions.

A. The Logic of Hierarchical Stepwise Regression

The purpose of hierarchical stepwise regression is to assign, as unambiguously as possible, portions of explained variance in the outcome to particular sets of predictors (Cohen and Cohen, 1975, Chs. 3 and 4). A model is hierarchical in that variables or sets of variables that are in some way "prior" or higher up in a hierarchy, are entered on earlier steps, and thus given an earlier or better chance to explain variation in the outcome. Thus, the squared semipartial correlation of a variable, entered later in the equation, or the squared multiple semipartial correlation of a set of variables entered later in the equation is net of, or adjusted for, or controlling, for the variables or sets of variables that were entered earlier in the equation. Conceptually then, this is the same as an analysis of covariance (ANCOVA) in that the variables or sets of variables entered earlier in the equation act as covariates for those variables or sets of variables entered subsequently.

It is up to the researcher, then, to decide the hierarchical ordering among his variables or clusters of variables. Priority may be decided using different criteria (Cohen and Cohen 1975, pp. 99-101). One basis for assigning minority is on the basis of a casual ordering. If certain variables occurred earlier than other ones (e.g., father's occupation vs. own occupation), or if certain variables can be clearly identified as causes of other variables (e.g., medical treatment and recovery rates), then the variables or clusters of variables can be sorted on the basis of casual priority. Priority may also be decided on the basis of research relevance. That is, if particular variables are theoretically more crucial or relevant, they may be entered earlier in the equation.

Finally, a third basis, somewhat opposed to the second basis just discussed above, is to consider the stringency of the test desired. If a variable or cluster of variables is entered later in the equation it will, of necessity, have less of a chance to explain variance than if it were entered earlier. Thus, the most conservative test of a variable or set of variables can be provided by entering them last into the equation.

B. Testing for Interactions

To test for interaction we followed the procedures recommended by Allison (1977). Interaction terms are entered subsequent to the main effects and the researcher tests the increment in R^2 (or squared multiple semipartial correlation) to see if the addition is significant. Since interaction product terms are often highly collinear with their constituent main effects, the Beta weights associated with the interaction terms are not reliable. The T-ratios and B weights are, however, meaningful. In the present analysis we entered only two-way interactions.

In our regression analysis of police calls for crimes of violence ($FCNBX) the interactions did provide a significant increment in explained variance. This implies a lack of homogeneity of regression which is assumed in a hierarchical, stepwise procedure. Thus, strictly speaking, in this regression the explained variance associated with sets of predictors entered later in the regression is not actually net of, or controlling for, the sets entered earlier.

CHAPTER 6

A CLOSER LOOK AT THE MAJOR MODEL THROUGH PATH ANALYSIS *

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The hierarchical regressions reported in the last chapter confirmed that each of our three clusters of variables were relevant to crime-related outcomes. They do not, however, tell us how each of these clusters are relevant. To answer this question we turned to recursive causal models, using the decomposition approach suggested by Alwin and Hauser (1975). The block-level models confirmed the existence of two important mediating paths: the indirect impact of defensible space features on crime-related outcomes *via* territorial functioning, and the indirect impact of local social ties on crime-related outcomes *via* territorial functioning.

Introduction

In the prior chapter (chapter 5) we presented our major test of the hypothesized model (chapter 4). The procedure we used was hierarchical regression. These analyses provided us with two very important results. First, they confirmed that clusters of variables, representing concepts, were associated with various outcomes, as hypothesized. Second, they indicated that two clusters of variables may have a joint influence on the outcome of interest. We saw this in the block-level regression predicting police calls for crimes of violence ($FCNBX). Thus, we have the suggestion that clusters of variables may be intertwined.

There is another way, however, that two clusters of variables may be intertwined, in addition to the exertion of joint influence on an outcome. More specifically, one cluster may mediate the impact of another cluster, that is the effect of X_1 on Y_1 may be channeled, in part or wholly, through X_2. Such mediated impacts are called indirect effects (of X_1).

And, our major model (chapter 4) hypothesizes two important mediating or indirect impacts. First, it suggests that the influence of defensible space features will be mediated, in part, *via* territorial functioning. That is, one of the ways defensible space features influence crime-related outcomes is through territorial functioning. More extensive features may promote stronger territorial attitudes and behaviors which, in turn, reduce fear, problems, crime, and so on. The second hypothesized indirect effect concerns local social ties. The model suggests that local social ties may strengthen territorial functioning, which, in turn, may reduce crime-related outcomes. In other words, social ties influence crime and fear *via* their impact on territorial attitudes and behaviors. In short, our model makes some suggestions about how various predictors may influence various outcomes.

* The authors are indebted to Huey T. Chen for helpful advice.

predictor and the outcome. The total indirect effect of a predictor is the sum of individual indirect effects of that predictor. An indirect effect may be expressed as the intervening path coefficients. For example, if P_{32}=.4 and P_{21}=.3, then the indirect effect of X_1 on X_3 via X_2, is .12. The same principle applies to indirect paths composed of more than two links. Finally, the residual path coefficient is expressed as $\sqrt{1-R^2}$, and represents the amount of variation in an endogenous variable in the model which is not explained by the model. This coefficient represents the influence of a residual variable on an endogenous variable. There is one residual variable for every endogenous variable in the model. The noncausal relation between two variables is the difference between the zero-order correlation, and the sum of direct and indirect effects (r_{14} - $|P_{41}$ + TIE$|$).

In the present chapter we conduct a path analysis for every regression carried out in the prior chapter. We see these causal models as complementary to the step-wise regressions, in the sense that they give a finer-grained look at certain parts of our hypothesized model.

Method

Following the procedure suggested by Alwin and Hauser (1975) we developed a path analysis for each of the five regressions that appear in Chapter 5. The block-level path models were based on the reduced, non-multicollinear matrices of predictors. It is worth reflecting for a moment on the consequences, for the path model, of using these reduced sets of predictors. Use of the reduced set is an advantage in one respect. Since we have reduced the redundancy among predictors, the resulting betas are likely to be more stable (Gordon, 1968). A second advantage is that the reduced matrices allow much simpler models to be developed. On the other hand, some of the redundancy that we took out between various pairs of predictors may have been causal. We have therefore reduced, perhaps, the size of some total indirect effects. That is, the use of the fuller set of predictors may have reduced the size of the noncausal component for various variables. In the present study, therefore, our estimates of total indirect effects for various variables maybe viewed as conservative. On balance, however, we felt that the use of the reduced matrices would offer the most stable and interpretable path models.

In the block-level models all coefficients that are equal to or greater than .2105 may be considered statistically significant ($p < .05$) by a one-tailed test. In the individual-level models all coefficients equal to or greater than .0787 maybe considered statistically significant ($p < .05$). Due to the small n(63) in our block-level models the power to find a significant coefficient is lowered. Thus, some coefficients which are not significant in the present block-level models might be significant in other studies which use a larger sample.

Coefficients smaller than $|.05|$ we consider to be zero. Coefficients greater than $|.15|$ we consider to be sizable.

Hierarchical step-wise regression does not explicitly tell us about such channels. In order to explicitly understand how the influence of particular predictors is mediated by other predictors, we must turn to path analysis, which is a form of causal modeling. More specifically, we will treat our major model (chapter 4) as a causal model. The model is linear and fully recursive; that is, all causal effects are assumed to occur, and to be unidirectional. Such an assumption denies (in the model) the existence of possible feedback loops, or of dynamic interchange. Other investigators examining other versions of defensible space theory have made a similar assumption (Newman and Franck, 1980). Of course, future research may reveal that such an assumption is unwarranted.

Furthermore, to make our model linear and fully recursive, it is necessary in some instances to "pull apart" a cluster of predictors. We must assume that one variable in the cluster causally precedes another variable in the cluster. In the case of territoriality we pull the cluster apart based on the notion that territoriality moves outward. Attitudes and behaviors in home spaces influence attitudes and behaviors in near home spaces, which in turn influence attitudes toward and identification with the neighborhood. The major causal links, however, are those going between clusters of concepts.

Unfortunately, path analysis is a technique that people feel can only be properly used in a very few instances. For example, Heise (1969) has suggested that path analysis is a technique that should only be applied when the causal ordering between variables is undebatable. And, in the social sciences, he felt that only variables separated by time, such as father's occupation and son's education, could be unambiguously ordered. Gottfredson (1979) and Miller and Stokes (1975) have offered similar cautionary comments. In fact, the hue and outcry over the abuses of path analysis, and clamors for "judicious application", have almost matched the declamations about abuses of factor analysis which peaked in the 1960's.

Nonetheless, we feel it is appropriate to use path analysis in the present instance, even if some would argue that our causal ordering is debatable. The use of path analysis will offer us a finer-grained picture concerning how our predictors influence the outcomes of interest. And, since the assessment of the postulated indirect linkages is theoretically crucial, we decided to proceed with a path analysis.

A fuller explanation of path analysis can be found in Alwin and Hauser (1975) Kerlinger and Pedhazur (1973, p.305-330), Heise (1969, 1972, 1975), Land (1969), Turner and Stevens (1959), and Wright (1960a, 1960b). We wish here to simply define a few of the central terms. If the analysis is carried out on standardized variables, the path ocefficient (Pji) represents the percent of a standard deviation that a caused variable (j) will change, if the causing variable (i) changes by one standard deviation, controlling for all the variables that have already entered the model. The direct (causal) effect is the influence of the predictor on another variable net of, or controlling for, all the other predictors that are in the model. The total indirect effect (TIE) of a predictor is the causal influence of a predictor on an outcome mediated by, carried by, or channeled through all the variables in the model which intervene between the

Block-Level Results

Predicting Crimes of Violence Against Persons ($FCNBX)

A. Model

Our fully recursive model to predict crimes of violence against persons appears in Figure 1. (For ease of presentation we do not include interaction terms, which the prior regression indicated were important.) The model makes the following hypotheses: 1). real and symbolic barriers directly reduce police calls for crimes of violence (i.e., crime); and indirectly reduce crime by strengthening territorial functioning; 2). local social ties directly reduce crime, and indirectly reduce crime by strengthening territorial functioning; 3). territorial functioning directly reduces crime; 4). territorial responsibility also indirectly reduces crime by strengthening neighborhood-level identification.

The path coefficients resulting from the decomposition of effects appear in Table 1, and are interpreted in Table 2. The path coefficients are diagrammed in Figure 2.

B. Defensible Space Features

The relevant defensible space feature in the model is real and symbolic barriers in front. Sixty-four percent of its causal influence on crime is in the form of a direct impact (p_{51} = -.164), and the remainder of its influence is mediated by territorial functioning.

The hypothesized impact of defensible space features on territorial functioning is evident for one territorial variable but not the other. Defensible space significantly enhances neighborhood-level identification. (p_{41} = .311), but not near-home responsibility (p_{31} = .060). Thus, defensible space strengthens some aspects of territorial functioning, at the same time that it has a direct impact on crime.

C. Local Social Ties

The relevant social network variable in the model is belonging to a local organization that co-residents also belong to. The hypothesized direct impact of social ties appears, and is sizable (p_{52} = -.201). This confirms the notion that informal social control may directly reduce crime-related outcomes. The direct effect of local ties comprises 68% of its total causal influence. Thus, 32% of its impact is mediated by territorial functioning.

Our expectation that local ties would strengthen territorial functioning receives strong support. Local ties significantly enhance territorial responsibility (p_{32} = .274), and also foster neighborhood indentification (p_{42} =.193).

Figure 1

Block Level Model: Crimes of Violence to Persons

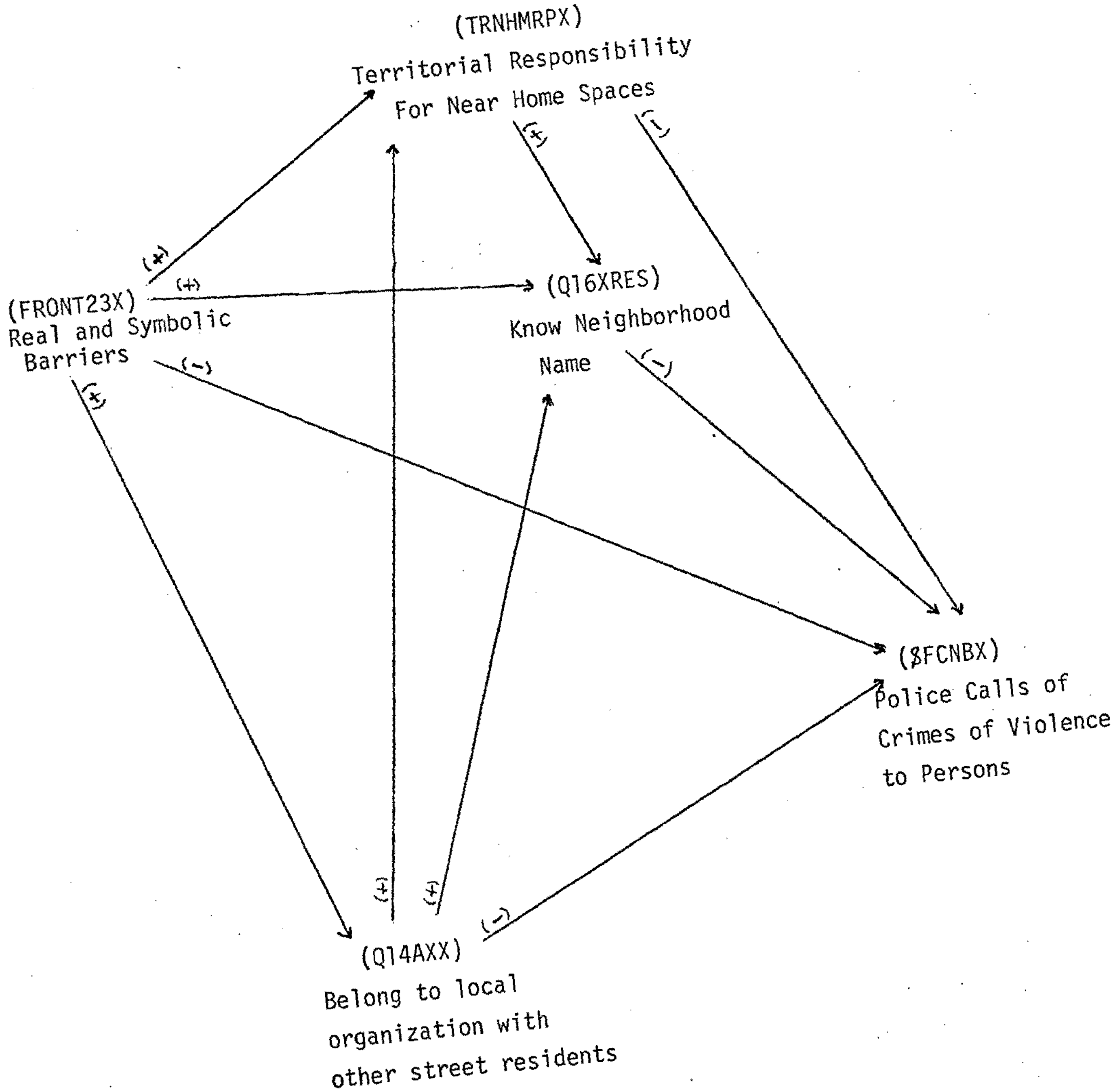


Table 1 Decomposition of Block-Level Crimes Model

Predetermined Variable	Dependent Variable									
	x_2	x_3	x_3	x_4	x_4	x_4	x_5	x_5	x_5	x_5
x_1 (FRONT23X)	.02204	.06578	.05974	.29672	.29415	.31074	-.25846	-.25194	-.24177	-.16361
x_2 (Q14AXX)			.27425		.11656	.19271		-.29583	-.24916	-.20068
x_3 (TRNHMRPX)						-.27766			-.17017	-.24002
x_4 (Q16XRES)										-.25155
x_5 ($FCNBX)										
Residual Coefficient ($\sqrt{1-R^2}$)	.9998		.959			.910				.876

Residual Coefficient ($\sqrt{1-R^2}$) .9998 .959 .910 .876

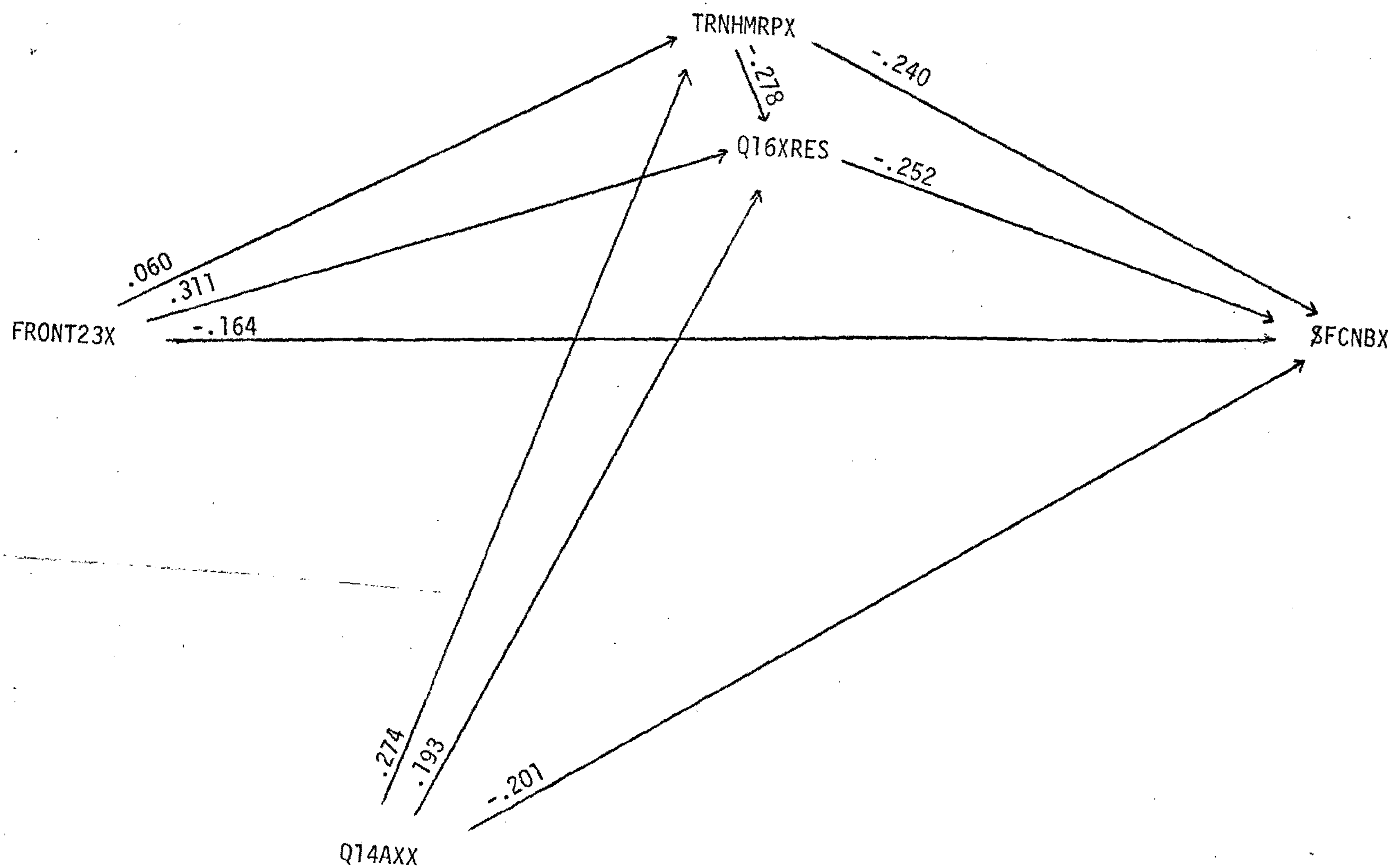
Table 2

Interpretation of Effects in a Block-Level Model of Crimes of Violence to Persons (%FCNBX)

Dependent Variable	Predetermined Variable	Total Effect	Indirect Effects Via X_2	X_3	X_4	Direct Effect
X_2 (Q14AXX)	X_1 (FRONT23X)	.022	-	-	-	.022
X_3 (TRNHMRPX)	X_1 (FRONT23X)	.066	.006	-	-	.060
	X_2 (Q14AXX)	.274	-	-	-	.274
X_4 (Q16XRES)	X_1 (FRONT23X)	.297	.003	-.017	-	.311
	X_2 (Q14AXX)	.117	-	-.076	-	.193
	X_3 (TRNHMRPX)	-.278	-	-	-	-.278
X_5 (%FCNBX)	X_1 (FRONT23X)	-.258	-.007	-.010	-.078	-.164
	X_2 (Q14AXX)	-.296	-	-.047	-.048	-.201
	X_3 (TRNHMRPX)	-.170	-	-	.070	-.240
	X_4 (Q16XRES)	-.252	-	-	-	-.252

Figure 2

Block-Level Model for Crimes of Violence to Persons (%FCNBX)



Thus, the model confirms both the expected direct impact of social ties, as well as the expected indirect effect.

D. Territorial Functioning

Two indices of territorial functioning appear in the model: feelings about responsibility toward near home spaces, and knowledge of a neighborhood name. Both of these variables exhibit a significant dampening impact on calls for crimes of violence (p_{53} = -.24 for responsibility, p_{54} = -.252 for neighborhood identification).

The two components of territoriality themselves appear to operate in a disjunctive rather than a complementary fashion. Stronger feelings about responsibility appear to dampen neighborhood identification. This suggests that at the block level there may be a limited reservoir of territorial energy, and if the energy is placed at one level this is at the expense of energies being places at another level.

Predicting Problems (TOTPROBX)

A. Model

Our model predicting block-level problems appears in Figure 3. The model makes the following hypotheses: more extensive defensible space features will boost territorial functioning, and also directly reduce problems; gardening in back will promote the recognition of outsiders in near home spaces, and also directly reduce problems. Recognizing who belongs in near home spaces will enhance neighborhood identification and directly reduce problems. Our reasoning is as follows regarding the two demographic variables. On stabler blocks where people have lived longer, feelings of attachment may be greater, and thus territorial functioning will be enhanced. The stability will also dampen problems. Non-white blocks, which represent less stable areas, in terms of length of residence, may experience more problems.

The results of our stepwise decomposition of causal effects appear in Table 3, and these are interpreted in Table 4. The path coefficients are diagrammed in Figure 4.

B. Defensible Space Features

Fifty-eight percent of the causal impact of real and symbolic barriers is direct, and the coefficient (p_{73} = -.154) for this effect is sizable although not significant. The remaining causal infleunce of defensible space features is channeled via territorial functioning, as hypothesized.

And, in two out of three instances the enhancement of territorial functioning by defensible space features is significant. Real and symbolic barriers significantly enhance gardening (p_{43} = .210) and neighborhood identification (p_{63} = .316). These are in accordance with the expectations of our framework concerning mediating effects.

Figure 3

Block-Level Model for Problems

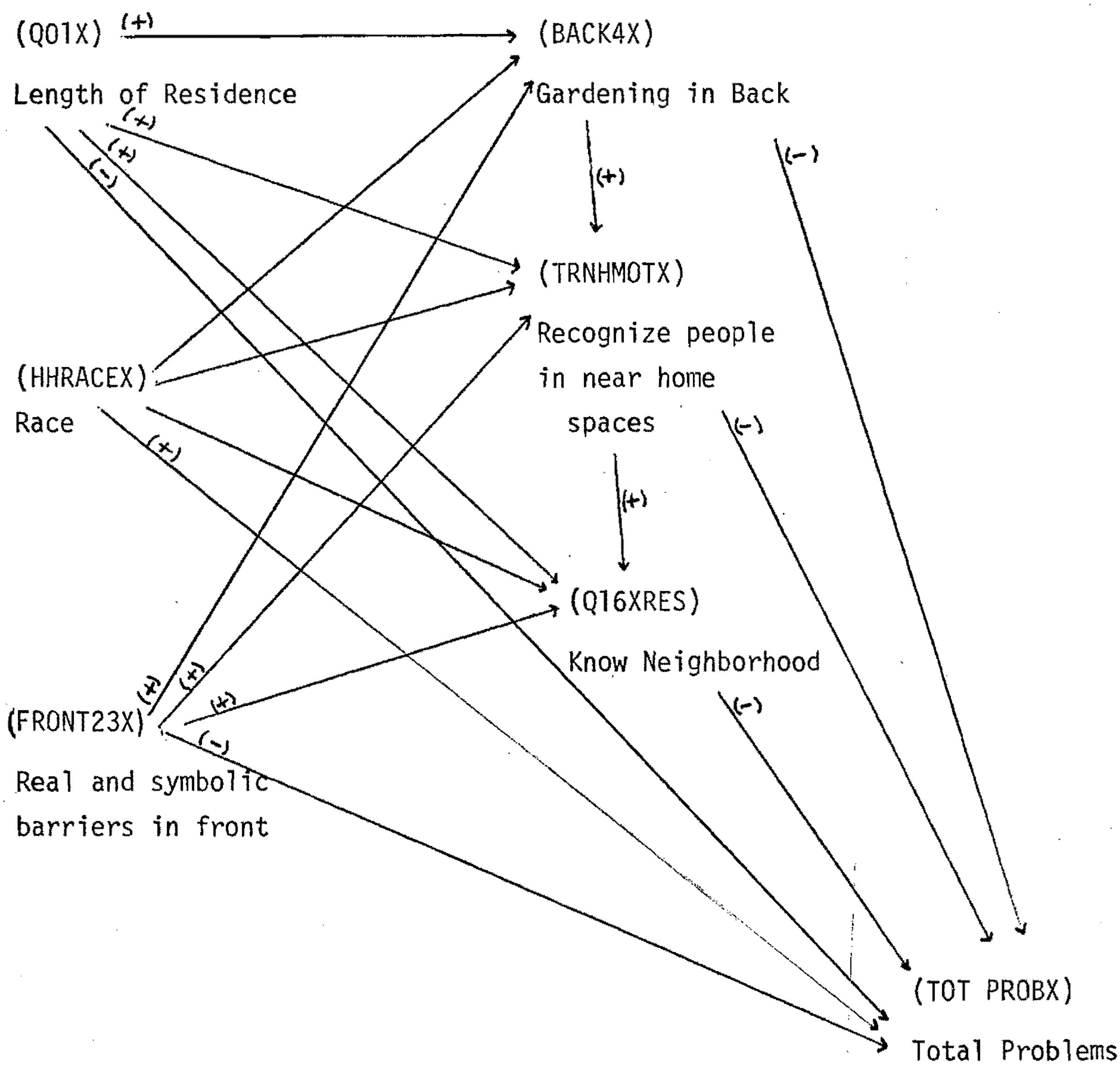


Table 3

Decomposition:
Block-Level Problems

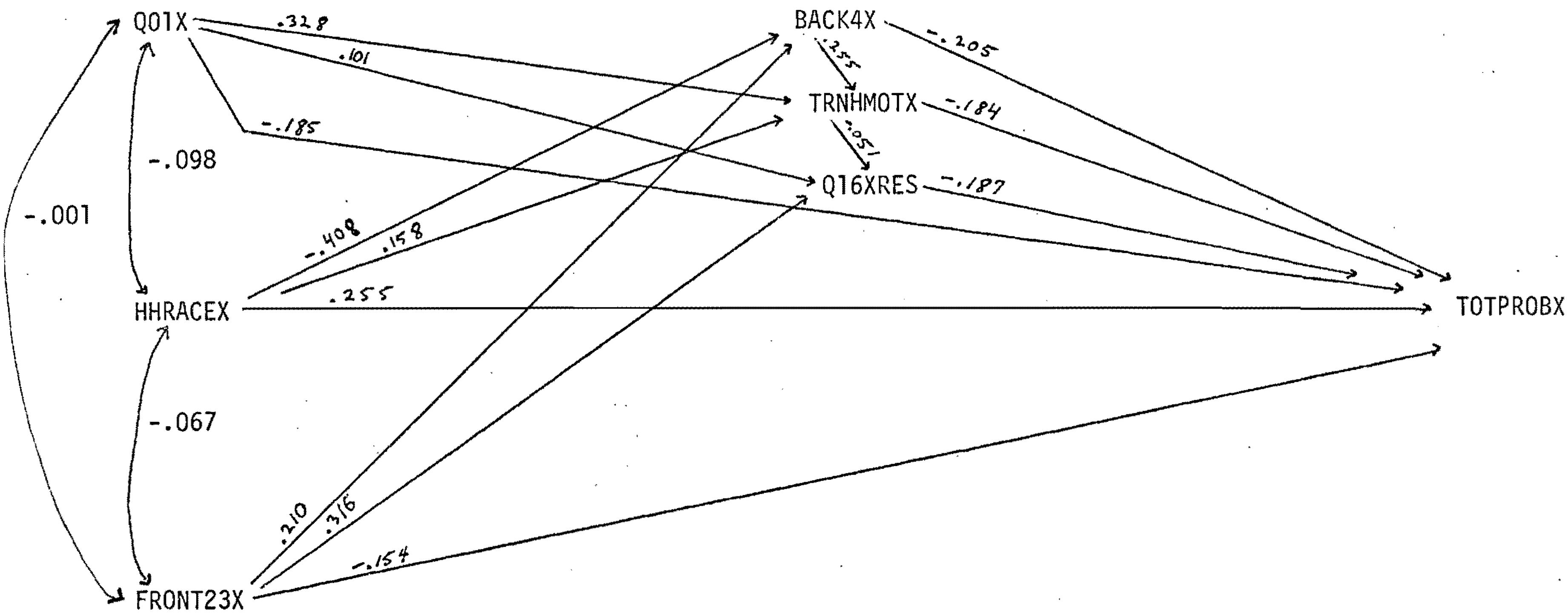
Predetermined Variable	Dependent Variable x_4	x_5	x_5	x_6	x_6	x_6	x_7	x_7	x_7	x_7
x_1 (QØ1X)	-.01395	.32445	.32801	.08530	.08421	.10101	-.25766	-.26096	-.20371	-.18486
x_2 (HHRACEX)	-.40838	.05357	.15790	.02834	-.00374	.00434	.32306	.22629	.25385	.25466
x_3 (FRONT23X)	.21001	.06797	.01432	.29870	.31520	.31594	-.26517	-.21541	-.21291	-.15396
x_4 (BACK4X)			.25547		-.07857	-.06548		-.23696	-.19327	-.20459
x_5 (TRNHMOTX)						-.05122			-.17455	-.18410
x_6 (Q16XRES)										-.18658
x_7 (TOTPROBX)										
Residual Coefficient ($\sqrt{1-R^2}$)	.882		.917			.947				.794

Table 4

Interpretation of Effects in Block-Level Model of Total Problems (ȾTOTPROBX)

Dependent Variable	Predetermined Variable	Total Effects	Indirect Effects Via x_4	Indirect Effects Via x_5	Indirect Effects Via x_6	Direct Effects
x_4 (BACK4X)	x_1 (Q01X)	-.014	-	-	-	-.014
	x_2 (HHRACEX)	-.408	-	-	-	-.408
	x_3 (FRONT23X)	.210	-	-	-	.210
x_8 (TRNHMOTX)	x_1 (QØ1X)	.324	-.004	-	-	.328
	x_2 (HHRACEX)	.054	-.104	-	-	.158
	x_3 (FRONT23X)	.068	.054	-	-	.014
	x_4 (BACK4X)	.255	-	-	-	.255
x_6 (Q16XRES)	x_1 (QØ1X)	.085	.001	-.017	-	.101
	x_2 (HHRACEX)	.028	.032	-.008	-	.004
	x_3 (FRONT23X)	.299	-.017	-.001	-	.316
	x_4 (BACK4X)	-.079	-	-.013	-	-.065
	x_5 (TRNHMOTX)	-.051	-	-	-	-.051
x_7 (TOTPROBX)	x_1 (QØ1X)	-.258	.003	-.057	-.019	-.185
	x_2 (HHRACEX)	.323	.097	-.028	-.001	.255
	x_3 (FRONT23X)	-.265	-.050	-.002	-.059	-.154
	x_4 (BACK4X)	-.237	-	-.045	.012	-.205
	x_5 (TRNHMOTX)	-.174	-	-	.010	-.184
	x_6 (Q16XRES)	-.187	-	-	-	-.187

Figure 4 Results of Block-Level Model Predicting Total Problems (TOTPROBX)



C. Territorial Functioning

The path coefficients describing the impacts of territorial functioning on problems are all sizable, and in the hypothesized direction. Thus, when the other variables in the model are controlled for, territoriality reveals a sizable dampening effect on problems.

Furthermore, gardening does appear to promote recognition of who belongs in near home spaces (p_{54} = .255). This makes sense in that people who are out gardening will simply be exposed more to people passing by. Neighborhood identification, however, appears to be essentially independent of the two other territorial variables.

D. Demographics

Block stability significantly enhances ability to recognize who belongs in near home spaces. It has a slight enhancing effect on neighborhood identification, and essentially no influence on gardening. Thus, stability does promote some aspects of territorial functioning. Block stability also has a sizable direct dampening influence on problems.

The impacts of racial composition on territorial functioning are more complex. Gardening is significantly more prevalent on white blocks, but recognition of outsiders is enhanced somewhat on non-white blocks. Race also has a direct effect on problems: problems are lower on predominantly white blocks. Thus, race is a bivalent exogenous variable. A predictor is bivalent if it has two effects on subsequent variables in the causal model, and the effects are of opposite sign.

Predicting Fear

A. Model

Our model predicting fear appears in Figure 5. The model makes the following predictions: defensible space features, in the form of real and symbolic barriers, or in the form of increased surveillance opportunities, will strengthen territorial feelings of responsibility, neighborhood identification, and local ties, and will also have a direct dampening effect on fear; knowing more people on the block will enhance territorial responsibility and neighborhood identification, and, at the same time, it will have a direct dampening influence on fear; increasing territorial responsibility, or increasing neighborhood identification will dampen fear; and territorial responsibility will enhance neighborhood identification.

The results of the step-wise decomposition appear in Table 5, and the effects are interpreted in Table 6. The resulting path coefficients are displayed diagrammatically in Figure 6.

Figure 5

Block-Level Fear Model

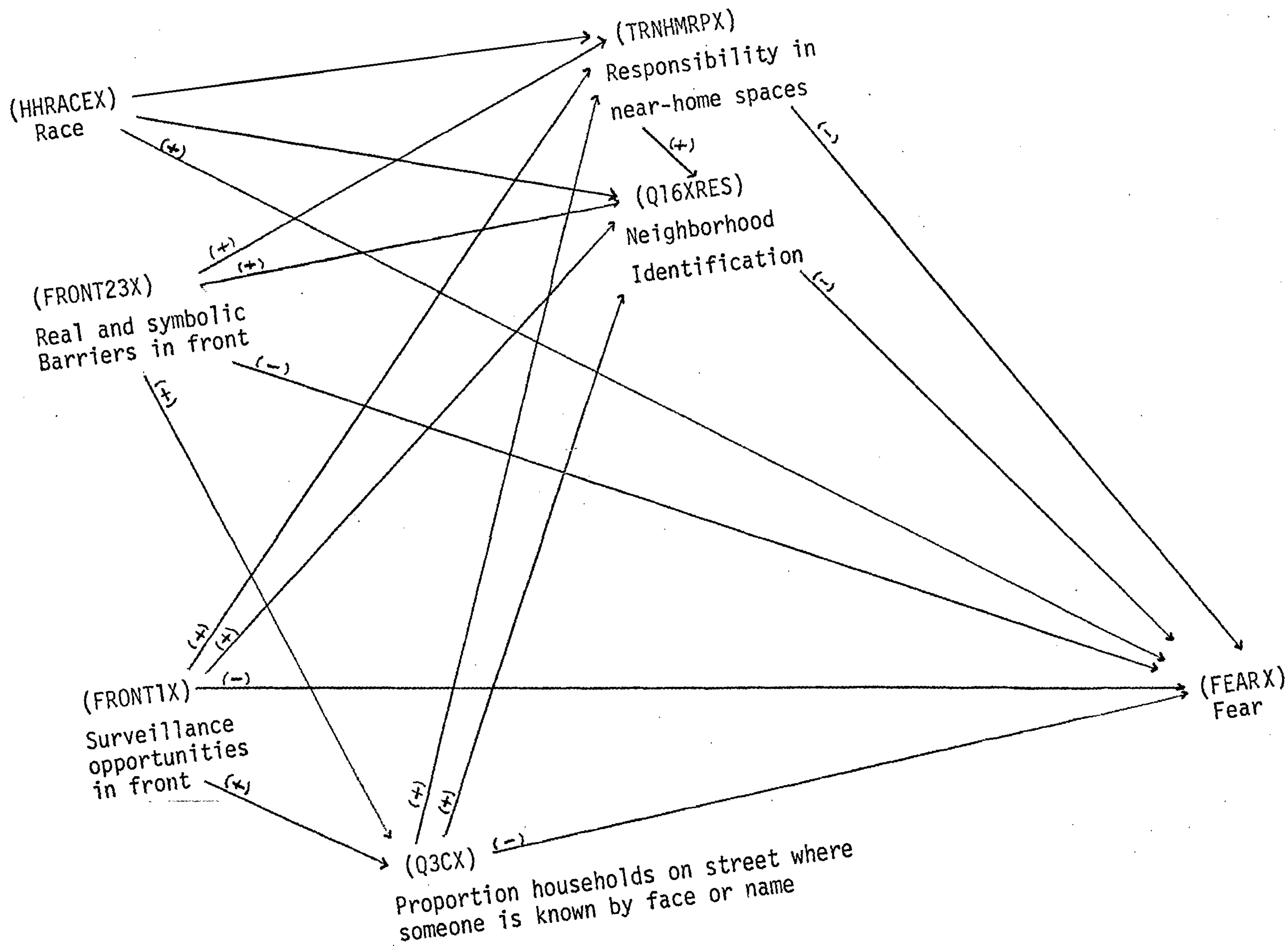


Table 5

Decomposition:

Block-Level Fear

Predetermined Variables	Dependent Variable									
	x_4	x_5	x_5	x_6	x_6	x_6	x_7	x_7	x_7	x_7
x_1 HHRACEX	-.10347	.02242	.06173	.00608	.00775	.02422	.38278	.34623	.35311	.35850
x_2 FRONT23X	.07933	.04140	.01127	.31712	.31584	.31884	-.26378	-.23576	-.23450	-.16357
x_3 FRONT1X	.03144	-.07134	-.08328	.05509	.05458	.03237	.06477	.07587	.06658	.07378
x_4 Q3CX			.37984		.01618	.11750		-.35327	-.31090	-.28476
x_5 TRNHMRPX						-.26675			-.11155	-.17089
X_6 Q16XRES										-.22247
X_7 FEARX										
Residual Coefficient ($\sqrt{1-R^2}$)	.992		.922			.921				.751

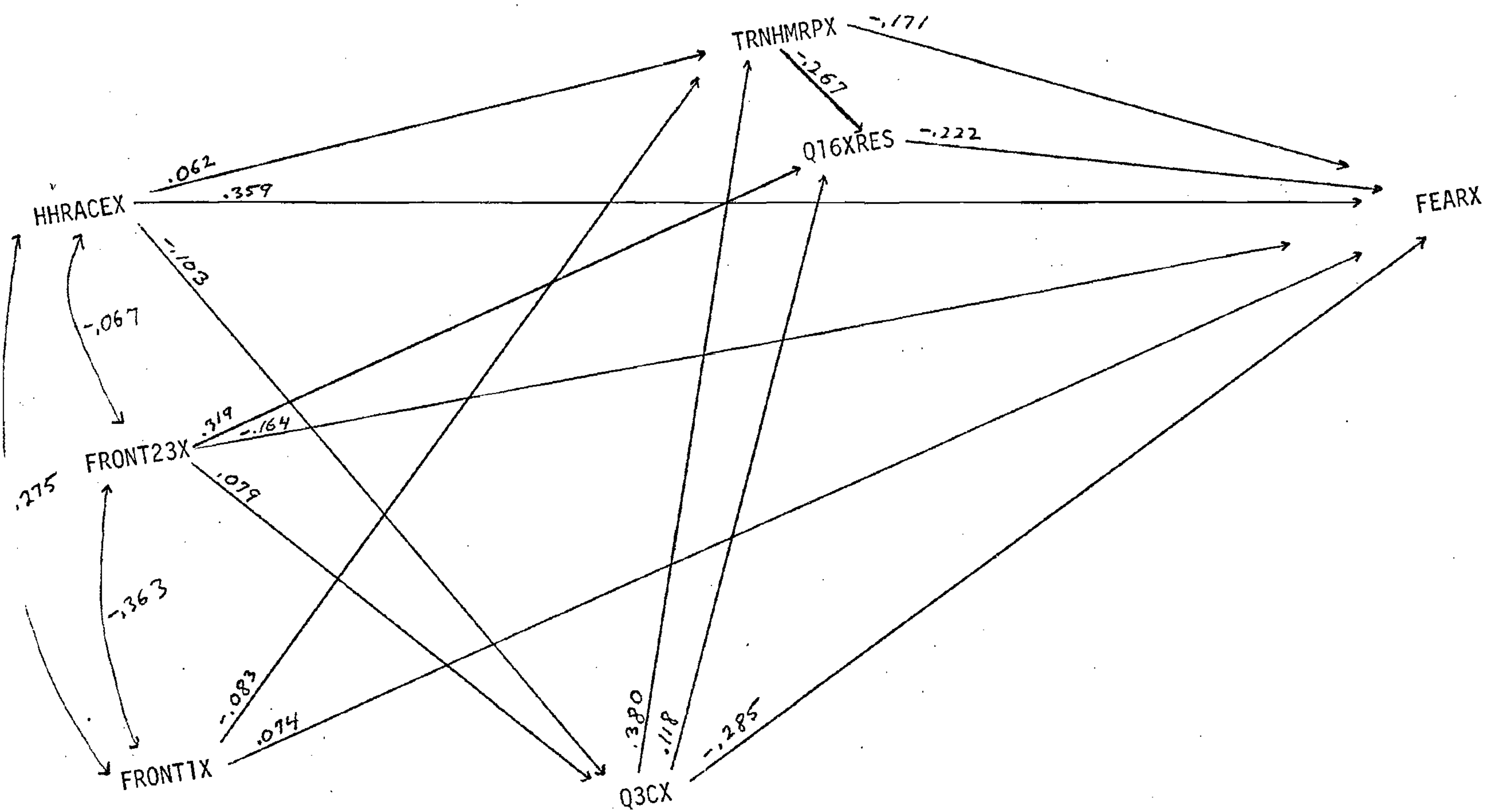
Table 6

Interpretation of Effects in a Block-Level Model of Fear (FEARX)

Dependent Variable	Predetermined Variable	Total Effect	Indirect Effects Via x_4	Indirect Effects Via x_5	Indirect Effects Via x_6	Direct Effect
x_4 (Q3CX)	x_1 (HHRACEX)	-.103	-	-	-	-.103
	x_2 (FRONT23X)	.079	-	-	-	.079
	x_3 (FRONT1X)	.031	-	-	-	.031
x_5 (TRNHMRPX)	x_1 (HHRACEX)	.022	-.039	-	-	.062
	x_2 (FRONT23X)	.041	.030	-	-	.011
	x_3 (FRONT1X)	-.071	.012	-	-	-.083
	x_4 (Q3CX)	.380	-	-	-	.380
x_6 (Q16XRES)	x_1 (HHRACEX)	.006	-.002	-.016	-	.024
	x_2 (FRONT23X)	.317	.001	-.003	-	.319
	x_3 (FRONT1X)	.055	.001	.022	-	.032
	x_4 (Q3CX)	.016	-	-.101	-	.118
	x_5 (TRNHMRPX)	-.267	-	-	-	-.267
x_7 (FEARX)	x_1 (HHRACEX)	.383	.037	-.007	-.005	.359
	x_2 (FRONT23X)	-.264	-.028	-.001	-.071	-.164
	x_3 FRONT1X)	.065	-.011	.009	-.007	.074
	x_4 (Q3CX)	-.353	-	-.042	-.026	-.285
	x_5 (TRNHMRPX)	-.112	-	-	-.059	-.171
	x_6 (Q16XRES)	-.222	-	-	-	-.222

Figure 6

Results: Block Level Model Predicting Fear (FEARX)



B. Defensible Space Features

Sixty-two percent of the causal impact of real and symbolic barriers is in the form of a direct impact on fear. The coefficient for this direct effect is sizable ($p_{72} = -.164$).

The remaining causal impacts of real and symbolic barriers (27% of total effect, 71% of total indirect effect on fear) is channeled via territorial functioning. And, the expected enhancement of territorial functioning by defensible space features is evident with neighborhood identification ($p_{62} = .319$).

The path coefficients of surveillance opportunities are all very small or essentially zero, suggesting that the causal impacts of surveillance opportunities are negilgible.

C. Local Social Ties

Eighty-one percent of the causal impact of acquaintanceship on fear is direct, and the coefficient for this path ($p_{74} = .285$) is significant and in the hypothesized direction. Thus, knowing more people on the street has a direct dampening influence on fear.

And, the indirect influence of local ties on fear via territorial functioning appears as expected. The impact of acquaintanceship on feelings of territorial responsibility is sizable and significant ($p_{54} = .38$). Thus, one of the important mediating paths hypothesized by the model is substantiated.

D. Territorial Functioning

The impacts of the two territorial variables on fear are of moderate size ($p_{75} = -.171$, $p_{76} = -.222$), in the hypothesized direction, and in one case significant. The path coefficient for the block of territorial variables, which Heise (1972) calls a sheaf coefficient, is also significant ($p_{7,56} = -.252$; $F(4,56) = 7.00$ $p < .001$)[1]. Thus, territorial functioning as a single construct has a significant, direct impact on fear.

Contrary to expectations, increasing feelings of near-home responsibility have a dampening impact on neighborhood-level identification ($p_{65} = -.267$). Thus, territorial functioning at the block and neighborhood level appear to operate in a disjunctive fashion instead of in a mutually supportive fashion.

E. Deomgraphics

The bulk of the causal impact of racial composition (94%) is in the form of a significant direct impact on fear ($p_{71} = .359$). Predominantly white blocks exhibit lower fear levels. The coefficients describing the impacts of race on

[1] The use of this sheaf coefficient would assume no causal relationship between the two territorial variables.

the intervening social and territorial variables, are small or essentially zero.

Individual-Level Results

Predicting Fear

A. Model

The model appears in Figure 7. It makes the following hypotheses: length of residence is associated with stronger territorial functioning, and has a dampening impact on fear; women exhibit weaker territorial functioning, and higher fear levels, than men; increasing income is associated with stronger territorial functioning, and lower fear levels; stronger territorial functioning has a dampening impact on fear; and chatting with people, and knowing who belongs in home spaces (THMOTZ) helps foster feelings of responsibility for home spaces.

The decomposition of causal effects is shown in Table 7, and the effects are interpreted in Table 8. The results are displayed diagrammatically in Figure 8.

B. Demographics

As expected, length of residence has a modest enhancing effect on territorial functioning. People who have lived on a block for longer than the average resident are better at recognizing who belongs in home spaces (p_{41} = .093). The bulk of the causal impact of length of residence on fear, however, is in the form of a direct effect (p_{61} = .252). This linkage is opposite to the direction expected: longer-than-average length of residence causes higher fear levels.

This direct effect of length of residence on fear is intriguing on two counts. First, it is different than the result obtained for length of residence at the block level. The model predicting problems found that block stability dampened problems. But here, individual-level stability, i.e., longer-than-average length of residence, elevates fear. Individual-level stability may be operating as a proxy for age. These contrasting results provide an interesting example of how a construct measured at two different levels of aggregation represents different concepts, and may therefore function differently.

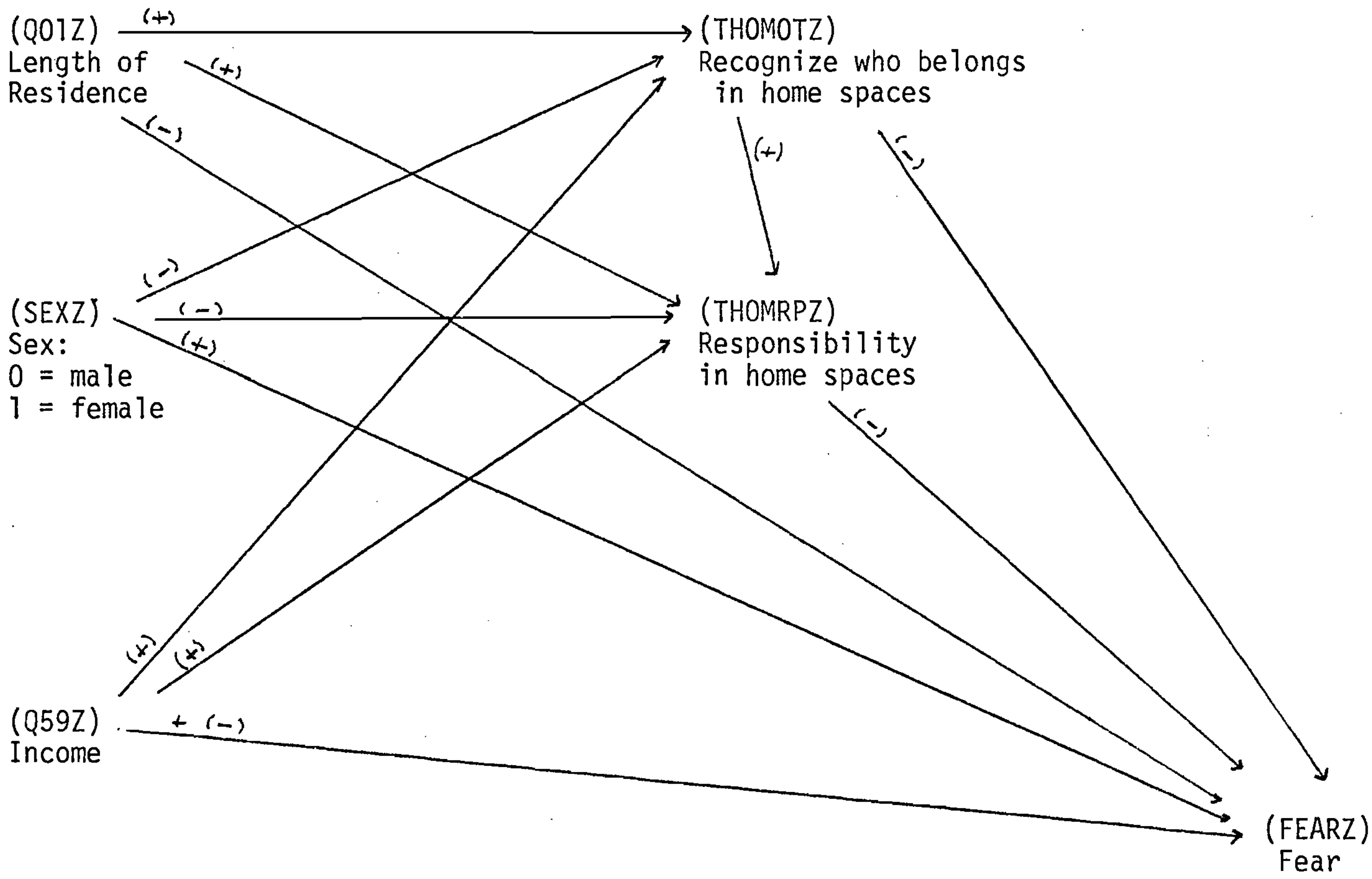
Length of residence is also interesting because its direct and indirect effects on fear are working in the opposite direction. While the direct effects are working to elevate fear, the indirect effects are working to dampen fear.

The sex variable, like length of residence, also reveals a strong direct effect on fear (p_{62} = .198) with women demonstrating higher fear levels. The paths linking sex to territorial functioning are very small or zero.

By contrast, income shows only a small direct effect on fear. Income does, however, have a sizable and significant enhancing impact on feelings of

Figure 7

Individual-Level Fear Model



Note: All variables are pooled within-block deviations.

Table 7

Decomposition: Individual-Level Fear

Predetermined Variable	Dependent Variable					
	x_4	x_5	x_5	x_6	x_6	x_6
x_1 (QØ1Z)	.09309	.07739	.04968	.23752	.24534	.25200
x_2 (SEXZ)	.01244	.07537	.07167	.18796	.18901	.19862
x_3 (Q59Z)	.01410	.21341	.20921	-.09439	-.09321	-.06517
x_4 (THMOTZ)			.29771		-.08406	-.04416
x_5 (THOMRPZ)						-.13403
x_6 (FEARZ)						
Residual ($\sqrt{1-R^2}$) Coefficient	.996		.928			.931

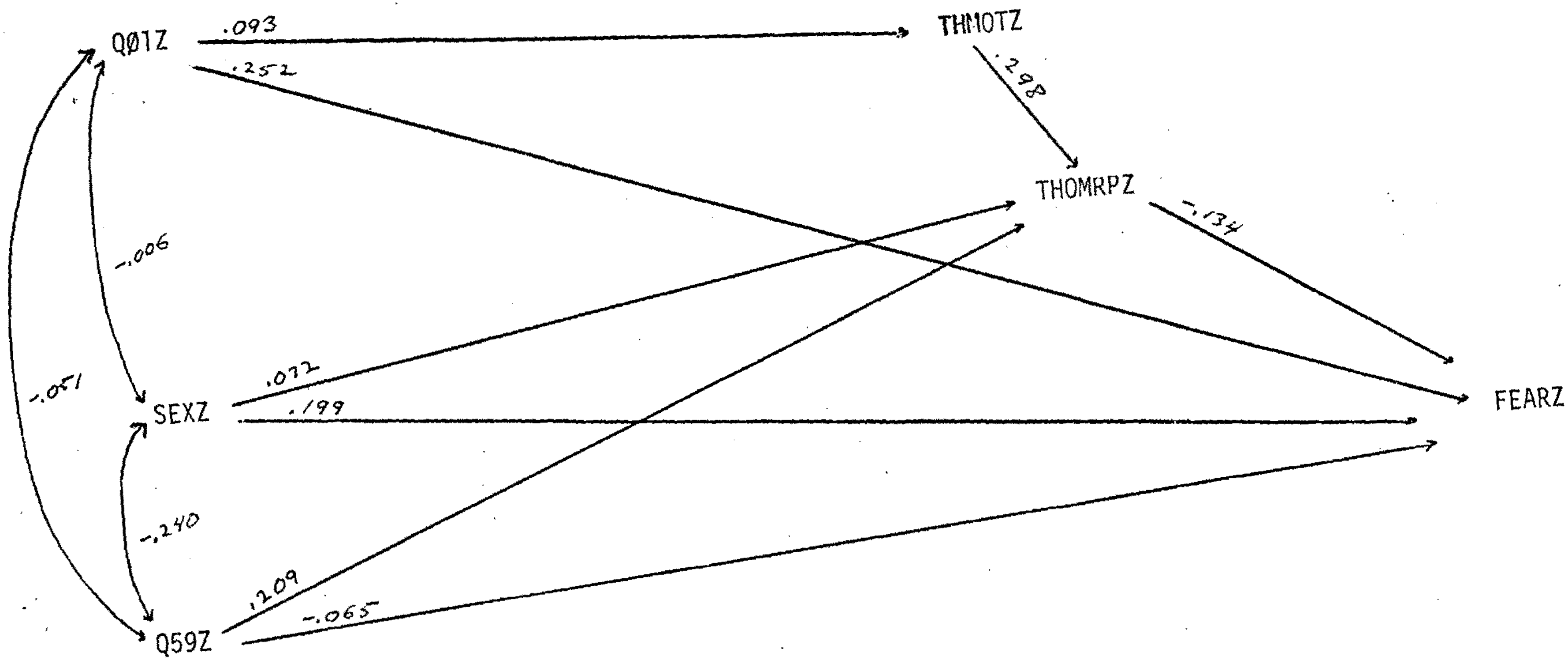
Table 8

Interpretation of Effects in Individual-Level Model of Fear (FEARZ)

Dependent Variable	Predetermined Variable	Total Effect	Indirect Effects Via: x_4	x_5	Direct Effect
x_4 (THMOTZ)	x_1 (Q01Z)	.093	-	-	.093
	x_2 (SEXZ)	.012	-	-	.012
	x_3 (Q59Z)	.014	-	-	.014
x_5 (THOMRPZ)	x_1 (Q01Z)	.077	.028	-	.050
	x_2 (SEXZ)	.075	.004	-	.072
	x_3 (Q59Z)	.213	.004	-	.209
	x_4 (THMOTZ)	.298	-	-	.298
x_6 (FEARZ)	x_1 (Q01Z)	.238	-.008	-.007	.252
	x_2 (SEXZ)	.188	-.001	-.010	.198
	x_3 (Q59Z)	-.094	-.001	-.028	-.065
	x_4 (THOMOTZ)	-.084	-	-.040	-.044
	x_5 (THOMRPZ)	-.134	-	--	-.134

Figure 8

Results: Individual Level Model of Fear (FEARZ)



Note. All variables are pooled within-block deviations.

territorial responsibility (p_{53} = .209), supporting the notion of an indirect impact on fear. And, the existence of this channel is one of the few solid clues in this model that helps us understand the role of the intra-block variation on demographic characteristics.

C. Territorial Functioning

Recognition of who belongs in outside spaces has a negligible direct impact on fear (p_{64} =-.044), although the coefficient is in the hypothesized direction. Recognition of outsiders does, however, have a sizable and significant impact on feelings of responsibility (p_{54} = .298) which, in turn, has a significant dampening impact on fear (p_{65} = -.134). Considered as a block of variables, the sheaf coefficient describing the direct territorial impact on fear is a sizable .159, $F(4,614) = 26.18$; $p < .001$.

Predicting Individual-Level Problems

A. Model

Our model for predicting individual-level problems appears in Figure 9. The model makes the following hypotheses. Increasing education will be associated with weaker social ties, based on the literature which suggests that lower SES groups are more dependent on local social groups. No hypothesis is made concerning the direction of the impact of education on problems. Getting to know people on the street reduces perception of problems and also fosters feelings of similarity. Perceived similarity, in turn, also dampens perception of problems.

Our decomposition of effects is shown in Table 9, and the interpretation appears in Table 10. The path coefficients are diagrammed in Figure 10.

B. Demographics

The bulk (88%) of the causal impact of education is in the form of a direct effect on problems (p_{41} = .151). Those who are more educated than their counterparts perceive a higher level of neighborhood problems.

The impacts of education on local ties are inconsistent. More educated respondents (relative to their neighbors) are acquainted with more people on the street (p_{21} = .092), but perceive themselves as less similar (p_{31} = -.108).

But, although the direct effects of education on local ties are inconsistent, the indirect effects of education on problems via social ties are consistent with the observed direct effect. That is, the direct impact of education on problems, and the indirect impacts, all result in a heightened perception of problems.

C. Local Social Ties

The direct effects of the two social variables are of the opposite sign.

Figure 9

Predicting Individual-Level Problems

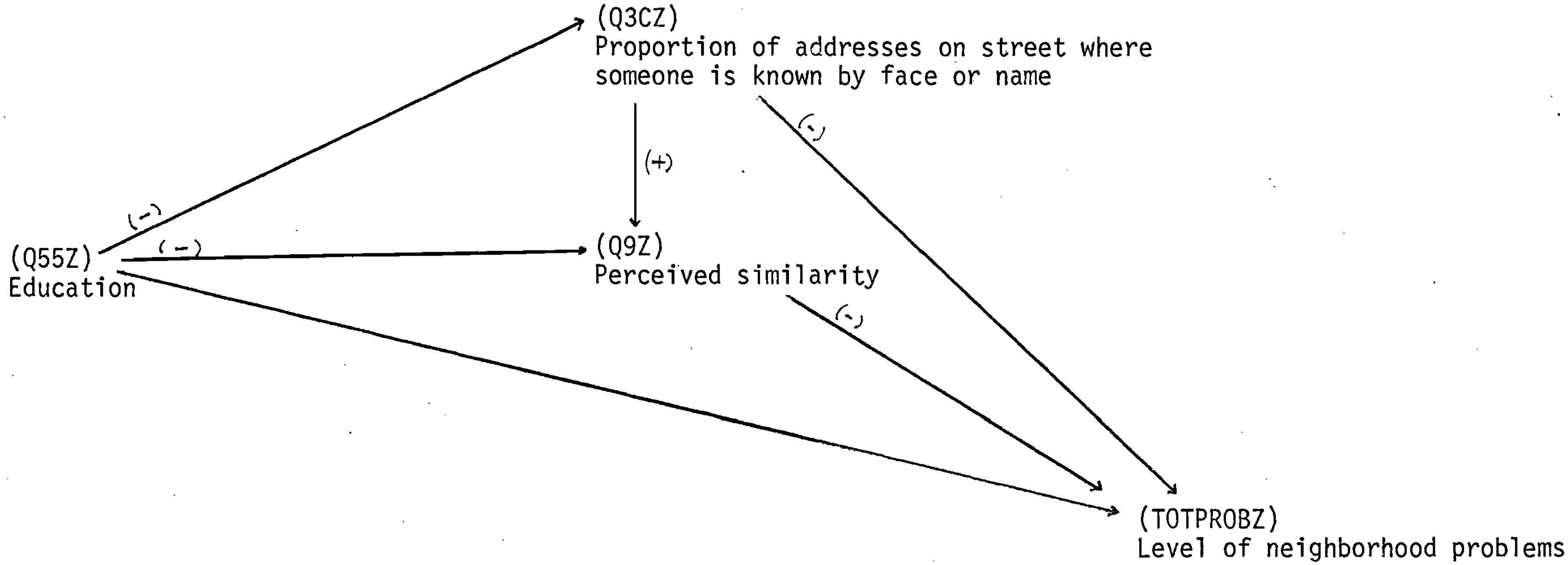


Table 9
Decomposition:
Individual-Level Problems

Predetermined Variable	Dependent Variable x_2	x_3	x_3	x_4	x_4	x_4
x_1 (Q55Z)	.09213	-.09355	-.10789	.17060	.16357	.15114
x_2 (Q3CZ)			.15565		.07636	.09428
x_3 (Q9Z)						-.11517
x_4 (TOTPRBZ)						
Residual Coefficient ($\sqrt{1-R^2}$)	.996		.983			.976

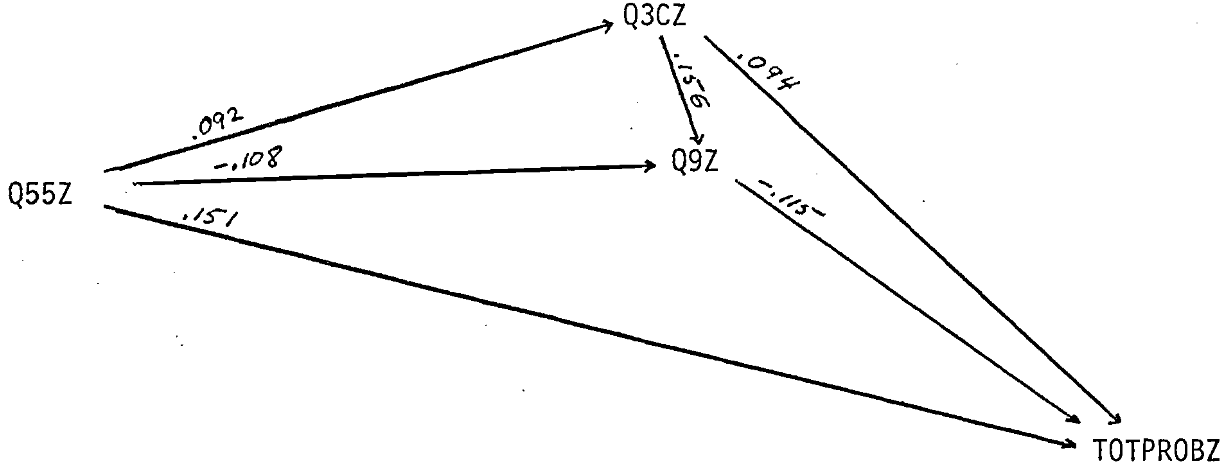
Table 10

Interpretation of Effects in Individual-Level Model of Total Problems (TOTPROBZ)

Dependent Variable	Predetermined Variable	Total Effect	Indirect Effects Via: x_2	Indirect Effects Via: x_3	Direct Effect
x_2 (Q3CZ)	x_1 (Q55Z)	.092	-	-	.092
x_3 (Q9Z)	x_1 (Q55Z)	-.094	.014	-	-.108
	x_2 (Q3CZ)	.156	-	-	.156
x_4 (TOTPROBZ)	x_1 (Q55Z)	.171	.007	.012	.151
	x_2 (Q3CZ)	.076	-	-.018	.094
	x_3 (Q9Z)	-.115	-	-	-.115

Figure 10

Results: Individual-Level Model for Problems (TOTPRBZ)



Note. All variables are pooled within-block deviations.

As expected, perceived similarity has a significant dampening effect on problems. (p_{43} = -.115). But, contrary to expectations, knowing more people on the street has a direct elevating effect on problems (p_{42} = .094). More in accord with our expectations, however, is the indirect impact of knowing people locally. Those who know more people on the street perceive themselves as more similar (p_{32} = .156) to one another. Thus, local acquaintanceship dampens perception of problems via its impact on perceived similarity.

In sum then, knowing people on the street (in residualized form) is a bivalent predictor: it directly heightens perception of problems, and indirectly, via a fostering of similarity, reduces perception of problems.

Again, as with the length of residence, the performance of the residualized acquaintance variable provides an interesting contrast to the performance of the same variable at the block level. In the block fear model knowing people locally was a consistent dampener of fear, through direct and indirect channels. We have, again, an instance of how a variable at different levels of aggregation performs differently.

Discussion

The major purpose of the path analyses was to examine how various predictors influenced the outcomes of interest in the study. Two major indirect channels were of interest: (1) an indirect dampening of crime-related outcomes by defensible space features, occurring via a strengthening of territorial functioning; and (2) a dampening effect of social ties on crime-related outcomes occurring via a strengthening of territorial functioning. And, the block-level path models provided support for both of these hypothesized indirect effects. This is perhaps the most important result of the path analyses.

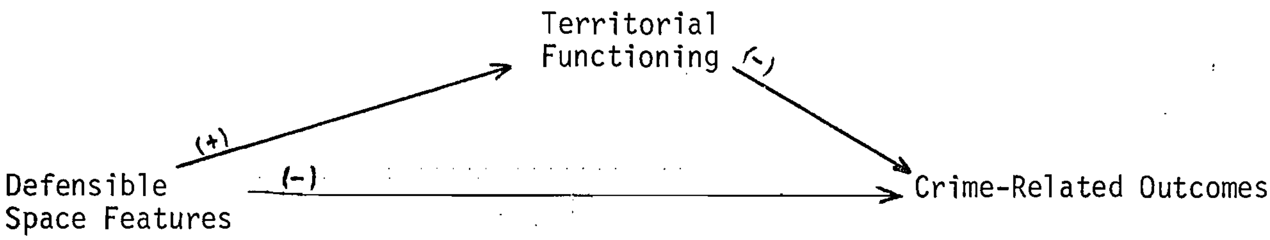
In this discussion section we go over each cluster of predictors in turn, and consider what the path analyses have revealed about each. Then we turn to a consideration of the complex role played by demographic variables in the various models. Finally, we discuss the relationship between our block-level and individual-level analyses.

A. Defensible Space Features

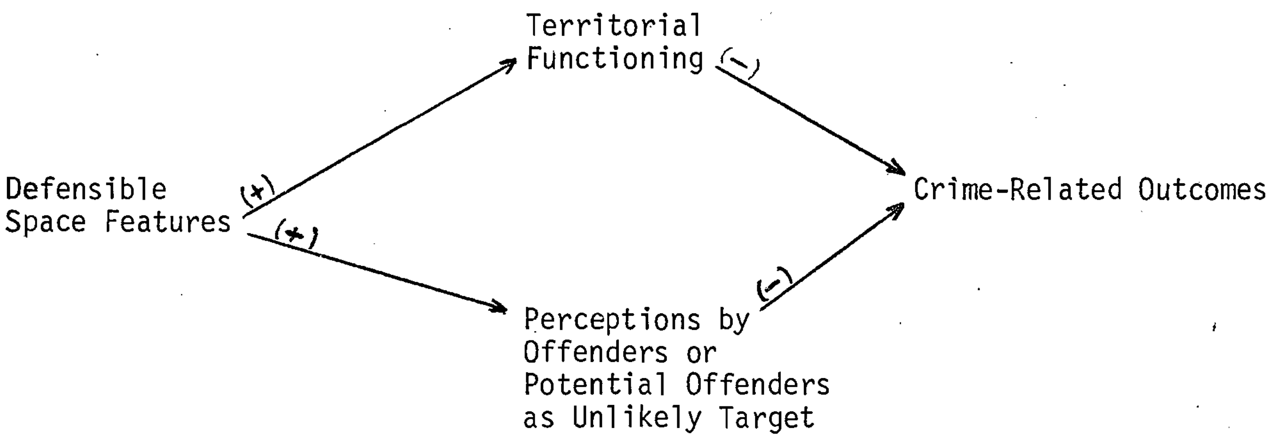
Real and symbolic barriers entered into all three of the block-level path models. And, in all three models, their direct dampening effects on crime-related outcomes were sizable, and of very similar magnitude. ($-.17 < Pji < -.15$). The observance of similar-sized effects for three very different outcomes testifies to the consistent and important direct role that physical features, at the block level, may play in the reduction of crime-related outcomes. Furthermore, the observance of such direct effects are consistent with the findings of Newman and Franck (1980). For example, they found, at the project level, that building size had a direct elevating effect on fear.

Of course, the finding that defensible space features have a "direct" effect on crime-related outcomes in the current model does not mean that the physical features themselves cause people to be less fearful or to experience fewer problems. Some medium must carry or convey the impact of these physical features. To pinpoint the responsible mechanism which carries the impact of the physical features is a purely speculative task at this point. Nonetheless, our guess at this point would fall on the perceptions of offenders or potential offenders. They may perceive defensible space features and respond accordingly.

Diagrammatically, we are suggesting that what is currently modeled as:



may actually operate as:



Until such a model is rigorously tested, however, our guesses about how the direct effects of defensible space come about will remain purely speculative. An alternative explanation of the direct effect of defensible space features is that it may be spurious: socioeconomic variation (z) causes both a certain housing environment (x) and a certain level of crime-related outcomes (y), thus socioeconomic variation actually causes crime-related outcomes (y), even though it appears that the housing environment (x) causes crime-related outcomes. We do not think such spurious correlation exists for two reasons. First, Newman and Franck (1980) found direct effects of comparable size to our own, even when income was controlled. Second, in the present model defensible space features have strong enhancing effects on neighborhood-level identification, even after the latter has been residualized with respect to several SES-related items.

(In terms of the above example, we have eliminated some $z \rightarrow y$ linkages.) Thus, the most plausible explanation for the direct effect of real and symbolic barriers on crime-related outcomes is that it is not spurious.

The hypothesized impacts of defensible space features on territorial functioning also appeared. In all three block-level models real and symbolic barriers significantly enhanced neighborhood level identification. In the block-level model of problems they also significantly enhanced gardening. Thus, we have one instance of physical features enhancing territorial functioning in the spaces right around the home, and three instances of physical features enhancing areal-level identification. The former instance is readily explicable. The presence of barriers makes the areas around the home more manageable, thus encouraging the resident to plant.

The latter instances are less readily explicable. First off, we don't think the link of physical features with neighborhood identification is spuriously caused by a joint association with socioeconomic variables, since the neighborhood variable was residualized with respect to race and owner/renter status. One plausible explanation is that living in a housing unit with clearly demarcated adjoining outside spaces fosters general feelings of attachment to or identification with the residential environment, at both the block and neighborhood level. Such a hypothesis, however, is not fully consistent with the negative relationship we observed between near-home territorial feelings and neighborhood-level territorial feelings.

A second explanation seems to us to be more tenable. Houses with real and symbolic barriers in front are located on blocks that are smaller, and have fewer units on them, than blocks consisting mainly of units without real and symbolic barriers. Living on smaller blocks with fewer people has two related consequences. First, residents are more encouraged to think about, or are simply more aware of events that are happening beyond the block, in the neighborhood. The smaller block size reduces the relative salience of the block vis a vis the neighborhood. In addition, it may be the case tha on smaller blocks people are more willing to talk to one another about neighborhood events. Of course, such suggestions about how to explain the observed link remain merely intuitive at this point.

Finally, it is informative to contrast the effects of defensible space features as revealed in our path models, with the effects observed by Newman and Franck (1980) for defensible space variables in a housing development context. One interesting difference was that in their study the path coefficients representing the influence of defensible space features on mediating and outcome variables were more sizable than the coefficients we observed in our study. For example they observed a coefficient of -.52 for the impact of building size on use of space, and a coefficient of .39 for the direct effect of accessibility on burglary. The observance of these larger coefficients may represent the stronger influence of physical variables in the housing development context as compared to the standard housing context. In other words, in a housing development context the power of physical variables, as a setting condition for subsequent interaction patterns and crime related outcomes, is greater than in the standard housing context.

One indirect effect of defensible space features which occurred, although not strongly, was the enhancement of acquaintance with co-residents by real and symbolic barriers, in the block-level fear model. Although this effect is by no means sizable, it is indeed explicable. As Baum, Davis, and Aiello (1978) have pointed out, considerable neighbor-to-neighbor watching, or interaction, can occur from the vantage point of the front yard. This provides a safe yet involved location from which one can partake of street life. And, in the fear model, a small coefficient representing this enabling condition appeared.

Finally, it is noteworthy that defensible space features did not enter at all into any of the individual-level models. This may reflect the fact that defensible space features are simply not relevant at the individual level, and have their effect mainly at the block level. That is, the physical features of the block as a whole may be the most important. Thus, defensible space notions may be most appropriate at a particular level of analysis - i.e., the block. Before we could conclude that this was definitely the case, however, such a study would have to be replicated in a housing environment where there is more sizable intra-block physical variation.

In sum then, at the block level defensible space features, primarily in the form of real and symbolic barriers in front, yielded the hypothesized direct dampening effect on crime-related outcomes, and the hypothesized indirect effect via a strenthening of territorial functioning.

B. Local Social Ties

One of the most important results of the path models was to confirm that local social ties enhanced territorial functioning. In the block level models of fear and crimes of violence against persons, the coefficients representing these impacts are sizable and significant. And, at the same time, local social ties demonstrated the hypothesized direct dampening effect on crime-related outcomes. Thus, at the block level we have confirmed a multi-channel impact of local social ties.

And, it is instructive that the territorial attitude which felt the impact of local ties most strongly was feelings of responsibility for near-home spaces. This suggests that on blocks where residents are more involved in the local social context there is an accompanying expanded sense of responsibility. Such expanded jurisdiction then dampens crime-related outcomes. Furthermore, it is noteworthy that the two block-level models which include social variables draw on different components of local social networks. Thus, more than one component of social climate is relevant to our major model, at the block level.

At the individual level, however, the role of local social climate appears to be somewhat more complex than at the block level. As we see in the model predicting problems, knowing people on the block has a direct enhancing effect on perception of neighborhood problems. Such elevating effects of social ties have been suggested or observed in other studies. For example Hunter (1975) noted that when people in the neighborhood got together, the main topic was local problems like crime or drugs. Thus, people who know more people locally may hear more bad news. Also, Kleinman and David (1973) found that, in one neighborhood, perception of local crime rates was higher among black residents who had more local social contacts. Thus, our finding that local acquaintanceship enhances perceived problems is not totally unanticipated, or empirically novel.

What is rather novel, though, is the fact that the same variable also has an indirect dampening effect on perception of problems. Acquaintanceship fosters perceived similarity which in turn dampens perception of problems. In other words, the indirect path of the acquaintanceship variable is working in the opposite direction of the direct channel. Thus, acquaintanceship, as a feature of local social ties, is an inherently ambiguous or bivalent attribute when considered in relation to perception of local problems. The general implication of this finding is that simple notions of how community social development may lead to lower crime and fear levels, may in fact be erroneous at the individual level.

The social network variable of perceived similarity revealed, in accordance with expectations, a significant dampening effect on perception of problems. (In the next chapter we explore the localization of this effect in more detail.)

In sum then: at the block level local social ties represent an unqualified good, strengthening territorial functioning, and directly reducing crimes of violence and perception of problems. At the individual level social variables are more ambiguous.

C. Territorial Functioning

In the causal models at the block level a negative relationship between neighborhood level territoriality, in the form of knowing a neighborhood name, and territoriality relevant to spaces around the home, appeared. Thus, territorial functioning at these two levels was thus disjunctive. This poses many questions, in general, about the relationship between block level and neighborhood level territorial functioning. People may take an either/or territorial strategy, showing concern for, or identification with, either the block or the neighborhood.

In the block-level models, all of the coefficients representing the direct territorial impacts on crime-related outcomes were sizable ($P_{ji} > .15$), and in three out of seven cases were statistically significant. At the individual level, territorial variables were relevant to the fear model. In the individual model, the relevant territorial attitudes were those concerned with home spaces, in contrast to the focus on near-home territorial attitudes in the block level models. Thus, territorial attitudes toward near home spaces are relevant for understanding block-level fear, while territorial attitudes toward home spaces are relevant for understanding individual-level fear (controlling for block fear levels).

D. Demographics

The path models are illuminating in that they reveal the very complex contribution of various demographic factors to the major model being tested. At the block level, length of residence was a consistent dampener, through its direct and indirect path, of problems. Race, however was bivalent at the block level: non-white blocks had a direct positive impact on fear, and a negative impact on fear via territorial functioning.

At the individual level, however, demographic variables acted as ambiguous predictors as often as not. Only education and income had consistent direct and indirect effects. Increasing education directly and indirectly enhanced perceptions of problems, and increasing income directly and indirectly dampened fear. Sex (i.e., femaleness) was directly associated with more fear, and indirectly associated with less fear via territorial functioning. Length of residence operated in the same inconsistent fashion in the fear model. Of course, these indirect effects in the fear model are only a fraction of the size of the direct effect, since an indirect effect is equal to the product of the coefficients involved. Nonetheless, this inconsistent pattern is inherently interesting.

The important theoretical upshot of such a pattern is that the incorporation of sociocultural context into any sort of revised defensible space model must accomodate complex and disparate outcomes of those variables. That is, theoretical justification must be given for distal effects of opposite sign. Any particular demographic, then, is a force impinging at several points on processes of resident-based control, the directionality of which (force) is different at different points of entry.

And, we hasten to add, that it is quite important to understand the multiple ways that sociocultural context does impact on resident-based control processes if we are to move toward a practical application of these findings.

Any particular community crime prevention program is carried out in a particular context. That is, residents with a particular level of education, income, and length of residence are involved. And, the results of our models suggest that these background factors will have substantial, and complex impacts on crime-related outcomes which are also relevant to community crime prevention programs. The development of effective community crime prevention programs would seem to necessitate that these impacts be understood.

E. A Comment on Models at Two Different Levels

By carrying out path models at two different levels of aggregation, several important points are revealed. The most important lesson is how particular variables, such as length of residence (Q01) and local acquaintances (Q3C), can have different causal impacts at different levels of analysis. At the block level these were monovalent or consistent predictors, and at the individual level they were bivalent or inconsistent predictors. This underscores the notion, discussed in Chapter 2, that a variable becomes conceptually different at various levels of analysis.

In the standard residential environment block-level social or territorial features must evolve out of somewhere. They cannot be sui generis. Thus, we are not convinced that the block is the level for any analysis of resident-based control in the context of defensible space functioning.

Conclusion

Path analyses have confirmed two hypothesized mediating effects. At the block level, defensible space features dampen crime-related outcomes via a strengthening of territorial functioning; and, local social ties dampen crime-related outcomes via a strengthening of territorial functioning. These two indirect effects operate in addition to sizable direct effects. Also, the path models revealed how various demographic variables may contribute in several ways to the proposed model.

CHAPTER 7

Territorial Cognitions and Social Climate In Urban Neighborhoods[1]

Ralph B. Taylor
Stephen D. Gottfredson
Sidney Brower

In the last chapter we saw that, at the block level, local social ties supported territorial functioning. In the present chapter we examine such a linkage at the individual level. We look at the linkages between territorial cognitions and social ties in neighborhoods of varying compositions. The cognitions investigated included problems related to a lack of control, insider/stranger distinctions, and responsibility. Based on previous territoriality research, we hypothesized: (1) as perceived similarity increases, territorial cognitions will strengthen (i.e., problems will decrease, insider/stranger distinctions will be easier, and responsibility will increase); and (2) as neighborhood stability increases, territorial cognitions will strengthen. Results from surveys and records of police activity supported the hypotheses. Perhaps the most interesting result was that social ties and neighborhood composition each exerted an independent influence on territorial cognitions concerned with problems.

Territorial cognitions are a significant and often overlooked component of human territoriality. Labels such as territorial "meanings" (Edney, 1974), or territorial "interpretations" (Bakker and Bakker-Radbau, 1973) have been applied to these cognitions. Territorial cognitions are the attitudes an individual holds about the territories with which he/she is familiar. These cognitions may help predict or interpret various behaviors (Edney, 1974; Taylor, 1978; Taylor and Brooks, 1980). Therein rests their significance. Admittedly, many factors may influence territorial cognitions. For example, some persons may feel more ownership over or responsibility for territories than others, and this variation may be associated with fear levels (Patterson, 1978). Also, some territories educe more feelings of privacy or control than others (Altman, 1975; Taylor and Stough, 1978). Nonetheless, investigators have focused largely on the intrapersonal or individual-level determinants of territorial cognitions, and have ignored interpersonal determinants. The present paper ventures to redress this imbalance. We examine the notion that local social climate may

[1]Portions of this research were presented at the annual meeting of the American Psychological Association, Montreal, September 1980. The authors are indebted to Whit Drain, Karen Franck, Allem C. Goodman, David Haines, Patty Nevin and Amos Rapoport for helpful comments on earlier versions of this manuscript.

influence territorial cognitions.

Interpersonal influences on territoriality have not, however, been totally disregarded. Some recent, albeit limited research does suggest that social structure and territorial functioning may be linked. Sundstrom and Altman (1974) examined territoriality and dominance in a population of institutionalized, teenage males. They observed a positive relationship between territorial behavior (i.e., frequent use of particular areas) and position in the dominance hierarchy, when group structure was stable. Also, when group composition was invariant, high dominance subjects used desirable areas more frequently than low dominance subjects. Such a territoriality-dominance linkage facilitates smooth group functioning. The authors also observed, however, that the dominance effect was attenuated when the group's social structure was disrupted, as in times of turnover. Thus, at least in this restricted setting, with a specific population, territoriality was partially dependent upon the social composition of the group.

Such a linkage between territorial functioning and social climate may also hold in the urban residential environment. In the urban environment control over access to territories and over the activities that go on there, as well as problems related to lack of such control (e.g., fear, vandalism), are key concerns of residents. Given that control is a central aspect of human territoriality (Edney, 1975, 1976a, 1976b; Sundstrom, 1977), a territorial perspective may illuminate the precesses underlying the concerns and behaviors of urban residents.

Nonetheless, the investigation of territorial cognitions of urban residents requires some adjustments. Problems related to a lack of control are of more relevance to this population than are the abstract features of control. When asked how much control, or privacy they have in a particular territory, residents often respond with mirth or puzzlement. Thus, in the present study territorial control was investigated by asking about problems related to a _lack_ of territorial control.

Of course, problems may be more intense, and resident-based control weaker, in some parts of the city than in others. An understanding of this contextual influence may further sharpen our understanding of territorial functioning. Fortunately, this influence can be incorporated through an assessment of neighborhood characteristics. Baum, Davis, and Aiello (1978) have also suggested that resident-based control may be mediated by neighborhood characteristics. Given our territorial perspective, we felt that stability may be of preponderant importance. In more stable neighborhoods territorial functioning may be more efficient due to clearer insider/stranger distinctions, or due to residents who are more attached to their home, and thus are more involved in managing the local environment. A recent study by Edney (1972) underscores the role that stability may play in territorial functioning, at least at the individual level. He found that residents who anticipated a longer stay at their present address responded more quickly to a stranger's intrusion. Such a relationship may also hold at the neighborhood level, and territorial functioning may be more efficient in neighborhoods where the population is less fluctuating.

Although the neighborhood concept helps segment context, it is with considerable reluctance that we introduce this "fuzzy" concept. The term "neighborhood" has many uses. It may refer to a home range (Stea, 1970), a polity which advocates for itself (Crenson, 1978), a locale with specific social, historical, and physical characteristics (Keller, 1968), a symbolic area (Hunter, 1974; Rapoport, 1977), or an area within which residents may feel safe (Suttles, 1972). We do not wish to enter the debate about all the qualities an area must have before it's really a neighborhood. Rather, we simply point out that a neighborhood is a spatial unit; a unitary, bounded area. Furthermore, at least in Baltimore, those areas have accompanying organizations, and are well known to knowledgeable outsiders such as community leaders, and district planners. Thus, with the neighborhood concept we can segment the residential context, and, with accompanying data, we can describe that context.

Up to this point we have undertaken a general survey of the terrain to be explored, and assessed its relationship to already-known contours. But, before we chart our exact course and delineate our specific hypotheses, some additional details are required. An explanation follows of the cognitions assessed, the territories included, and the aspect of social climate examined.

The territorial cognitions included 14 statements reflecting various aspects of territorial functioning. A replicated principal components analysis of these statements yielded the following three dimensions: problems related to a lack of control (I), ease of distinguishing insiders from strangers (II), and responsibility (III) (Taylor, Gottfredson, Brower, Drain, and Dockett, 1980). Adding up the items to create a scale for each dimension, yielded the following correlations between scales: -.26 (I with II), -.16 (I with III), and .39 (II with III). Although these three dimensions do not include all aspects of territorial functioning, they do include a control-related dimension (I), and other aspects of territorial functioning important to residents in the study area (Brower, 1980).

The territories examined included six outdoor spaces. Residents were likely to continuously associate with these spaces over time and thus the six are territories (Edney, 1976a). The six territories included two home spaces (front steps or yard, back yard), two near home spaces (sidewalk in front of your house, alley behind your house), and two off-block spaces (sidewalk in front of a nearby store that you use, nearby park that you use). Tha latter type of territory was included because residents often felt that these were the focii of local problems (Brower, 1979). Neighborhood spaces such as these are within easy walking distance of all residents. Furthermore, since "pocket" parks and corner groceries are abundant in Baltimore, the layout of the Baltimore residential environment is such that each type of territory is fairly homogeneous, physically, throughout the area.[2]

Our assessment of social climate focused on the perceived consonance (Rosenberg, 1972, 1975) or homogeneity of the on-block social grouping.[3] In the interview each respondent was asked how similar block residents were to him/her on several dimensions: education, household income, age, religion, and marital status. After this series of items the respondent was asked "In general, considering the kinds of things mentioned in these questions, overall, how similar would you say most adults on this street are to you?" Such a procedure served to anchor the perceived homogeneity item. In other words, it was referenced to perceived similarity on several objective dimensions, which appear important based on past research on consonant social contexts (Rosenberg, 1972).[4]

Given the delineation of cognitions, territories, and social climate, we tested the following hypotheses. (1) Social climate may facilitate territorial functioning. Specifically, as perceived homogeneity increases problems may decrease, insider/stranger distinctions may be easier, and responsibility may increase. Underlying this hypothesis is the expectation that consensus on who should be doing what, where, increases as perceived homogeneity increases, resulting in smoother, clearer functioning in the local ecology. (2) Neighborhood stability may facilitate territorial functioning. Specifically, in more stable neighborhoods problems may be fewer, insider/stranger distinctions may be easier, and responsibility may be greater. (3) As problems related to a lack of control increase, calls for police service may increase.

Although evidence for our third hypothesis would support the external validity of the problem-oriented territorial cognitions, questions may still arise regarding the reliability of these attitudes. Past research has suggested

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[2]In terms of Altman's (1975) typology, our home spaces would probably be classified as primary territories, near home spaces as hybrid secondary/public territories, and off-block spaces as public territories. We refrained from classifying our three types of territories into Altman's typology since such classification is dependent on knowing who the occupant interacts with in the territory, and how much time is spent there.

[3]Throughout, the block refers to the houses facing each other across the street, i.e., the streetface.

[4]Internal analysis indicated that the anchoring procedure was successful. As subjects' overall perceived similarity increased, they were also likely to see themselves as more similar to co-residents on each of the specific questions asked (all p's <.001). Also, as overall perceived similarity increased, respondents were more likely to belong to a local organization along with co-residents on the block, and were more likely to have a higher ratio of friends-to-acquaintances on the block, and were more likely to have the majority of their friends living in the neighborhood (all p's <.001). As the block mean on overall perceived similarity increased, the block standard deviation (i.e., block variation) on social class factor, and on a marital status/household size factor, decreased (r's, respectively, = -.23, -.24).

that territorial cognitions covary with territorial behaviors such as marking (e.g., Patterson, 1978). At every surveyed site, pictures were taken of the front and rear of the household and yard. These pictures were then coded for territorial markers. If our territorial cognitions are reliable, they should allow us to significantly predict territorial behaviors such as marking.

In sum, we seek evidence that in the urban residential environment, at the individual level, territorial functioning can be smoothed by a consonant social climate and a stable neighborhood context. Attaining such evidence would result in a significant enhancement of our understanding of human territoriality.

We asked about territorial cognitions that previous experience indicated were important to residents in the area. The fourteen statements appear in Table 1. They are grouped into the three dimensions indicated by the previous principal components analysis (Taylor et al., 1980). For each of the six outdoor territories of interest to us, each respondent indicated his/her amount of agreement with each of the 14 territorial cognitions. For each cognition, he/she used a six point Likert scale. The endpoints were "Agree strongly" and "Disagree strongly."

One aspect of territorial behavior is the use of markers, i.e., the distribution of objects to indicate that a space is used, owned, or cared for. To assess territorial markers slides were taken of each house where a resident had completed a survey. A slide was taken of the front of the house, and of the back.

All slides were rated on two territorial dimensions: ornamentation, and gardening. Due to the restricted range of ornamentation which was observed, and the restricted range of gardening in front, we focused attention on gardening in back.

Using a five category scale all slides showing backs of houses were rated on level and extent of gardening. Two raters independently rated each slide. Inter-rater reliability, as assessed by the intraclass correlation, was .83. Reliability of the mean ratings, estimated using the Spearman-Brown formula, was .91. In our analysis we used the mean ratings.

Results

We report results in the following sequence. First ANOVA results relevant to the first two hypotheses are examined. Then we turn attention to the covariation of territorial cognitions and territorial markers, using a regression approach.

A. Anova Design

In each type of neighborhood (low-income, rental; mixed; medium-income, homeowned) a median split on the social climate variable was carried out. Subjects in the high group perceived on-block residents as more similar to themselves than subjects in the low group. The high/low cut point was essentially the same in each neighborhood type. (Recall that this social

Table 1

Territorial Cognitions

	Dimension	Statements
I.	Problems related to a lack of control	Troublemakers hang around
		I would be somewhat nervous or concerned if I was alone at night.
		People who use this space abuse it.
		It's hard to keep out people if I don't want them to be there.
		I'm likely to be bothered by undesirables.
		There's a lot of vandalism.
		There's a lot of littering.
II.	Insider/stranger distinction	I can tell people who belong there from outsiders.
		I there's a suspicious person hanging around, someone's bound to call the police.
		I see mostly people I know there.
		I am likely to chat with friends and neighbors.
III.	Responsibility	I feel some responsibility as a member of the neighborhood for what goes on.
		I feel personally responsible for what goes on.
		I have more say than others about what happens.

variable was relevant to the individual-level path models in the previous chapter, and not the block-level models. Therefore, by focusing on this particular variable we insure that we are examining individual-level processes.)

We felt it would be best to analyze the data using an ANOVA design in which all variables were between-subjects factors. The use of a fully between design assures us that results will not be distorted by intrapersonal trends. Furthermore, a between-group design "breaks up" groups of respondents who may have been living on the same block, thus further insuring that we are examining individual-level processes, and not block-level processes. In order to insure a reasonable number of subjects in each cell of the analysis, the following steps were taken. (1) The six territories were collapsed into three types of territories: home, near home, and off-block. Inspection of the territories x territories (6 x 6) correlation matrix for each territorial cognition indicated that this step was justified empirically as well as conceptually. (2) Scales were created by adding up, for the two places within a type of territory, the variables relevant to that dimension of territorial cognition. (3) In order not to "lose" respondents who failed to answer all items on a scale, mean scores for items on a scale were used instead of total scale scores. Thus, all subjects who answered the majority of items on a scale were included. This step did not distort relations between dimensions. Intercorrelations between cognition dimensions using mean item scores were not different from the intercorrelations using total scale scores.

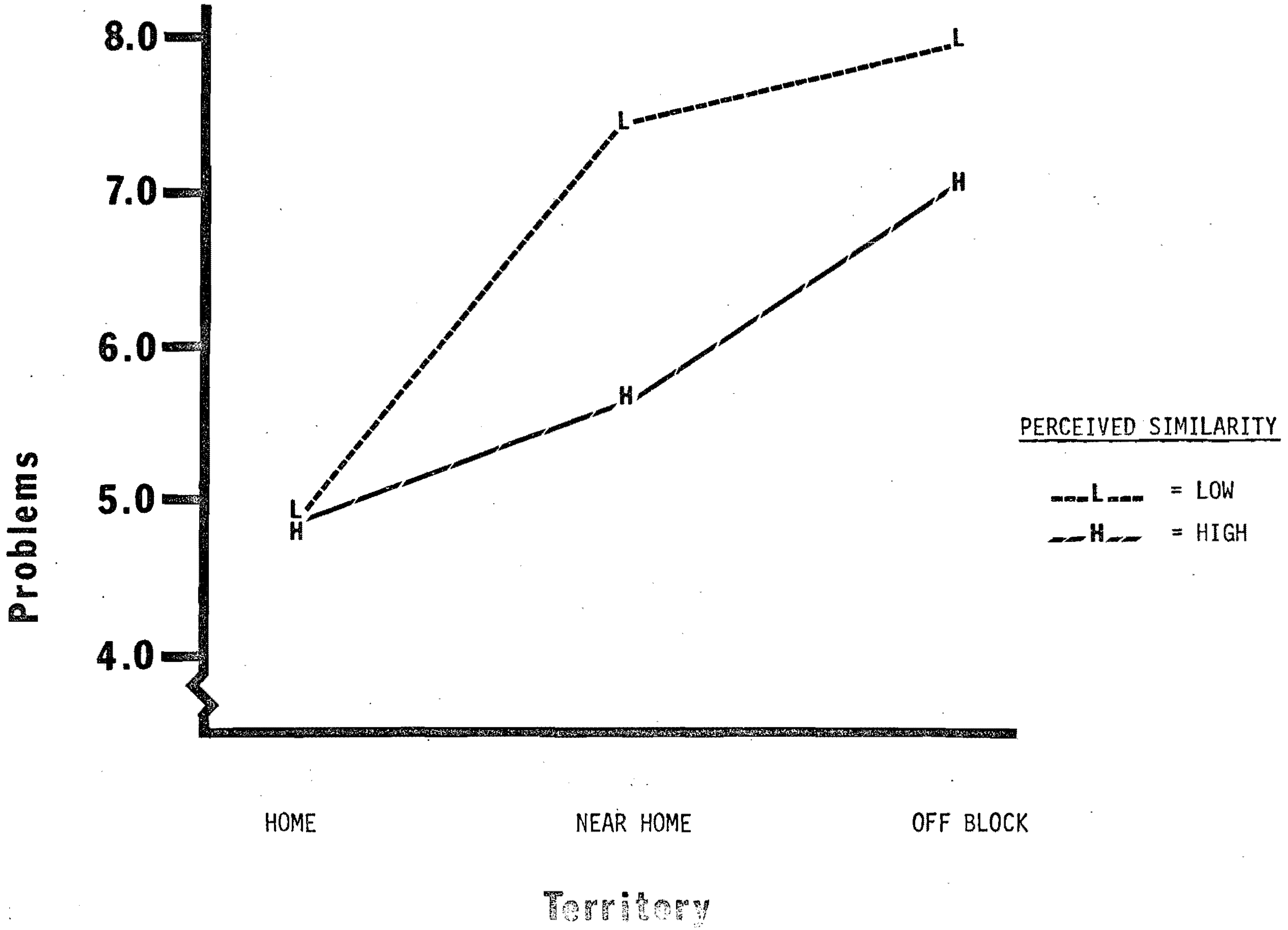
Respondents were randomly assigned to a type of territory. For each dimension of territorial cognition a 3 x 2 x 3 (Neighborhood x Social Climate x Territory) fully between, factorial ANOVA was carried out. There were 8 subjects in each cell. For post hoc tests the Scheffé procedure (Hays, 1973) was used.

B. Problems

The analysis of problems related to a lack of control yielded support for our first hypothesis. A main effect for social climate revealed that respondents who perceived themselves as living in a more homogeneous social climate experienced fewer problems in local territories ($F(1,126) = 9.92$, $p < .01$). This main effect was qualified by a Social Climate x Territory interaction ($F(4,126) = 3.09$, $p < .05$). The relevant means are graphed in Figure 1. The significant difference ($p < .05$) between the two near-home means is particularly instructive. It suggests that as local social climate worsens, the bulk of increasing problems are experienced, or funneled into, near-home territories.

Furthermore, this analysis also yielded support for our second hypothesis with a significant Neighborhood x Territory interaction ($F(4,126) = 3.08$, $p < .05$). Post hoc tests revealed the following pattern of means. In near-home territories, respondents in low-income, rental neighborhoods experienced a higher level of problems than respondents in medium-income, homeowned neighborhoods ($p < .05$). Thus, neighborhood stability appears to facilitate territorial control in near-home spaces.

Social X Territory Interaction on Problems Factor



C. Insider/Stranger Distinction

On the insider/stranger distinction we obtained one result relevant to our first hypothesis, a Social Climate x Territory interaction ($F(2,126) = 3.88$, $p < .05$). Post hoc tests indicated that respondents who perceived themselves as living in a more homogeneous social group had a harder time distinguishing insiders from strangers in off-block territories, than did residents who perceived themselves as living in a less homogeneous social context, ($p < .05$). The analysis yielded no results in support of our second hypothesis about neighborhood effects.

D. Responsibility

The analysis of the responsibility dimension yielded support for our second hypothesis through a main effect for neighborhood ($F(2,126) = 6.08$, $p < .01$). Post hoc tests indicated that residents in middle income, homeowned neighborhoods felt more responsibility towards local territories than residents in low-income, predominantly rental neighborhoods, ($p < .05$). Thus, increasing responsibility was associated with increasing stability.

Also, the analysis yielded a three-way interaction, the results of which are pertinent to our first two hypotheses ($F(4,216) = 2.96$, $p < .05$). Post hoc tests indicated that for residents in a homogeneous social climate, neighborhood stability enhances responsibility toward near-home territories. Specifically, respondents in a social climate perceived as consonant, felt more responsibility toward near home spaces if they were living in a middle income, predominantly homeowned neighborhood, than if they were living in a middle income, predominantly rental neighborhood ($p < .05$). Thus, social climate and neighborhood characteristics reveal a conjoint influence on territorial responsibility.

E. Other Cognition Results

Each ANOVA yielded a main effect for type of territory (all ps $< .001$). Moving from home to off-block territories, problems increased, insider-stranger distinctions were less easily made, and responsibility decreased. Such variation in cognitions across territories has been noted in other studies (Altman, 1975; Taylor and Stough, 1978).

F. Territorial Cognitions and Territorial Markers

As mentioned above, past work has indicated that territorial cognitions covary with territorial behaviors. Given this linkage, if our present territorial cognition data is reliable, it should help us predict territorial behaviors of residents. The behavior examined was gardening. Stepwise hierarchical regression (Cohen and Cohen, 1975) was used to predict this form of marking. To control for neighborhood context, a neighborhood covariate was entered on the first step. On the subsequent steps the territorial cognitions were entered in the following order: attitudes about yard behind the home, attitudes about the alley, attitudes about property and sidewalk in front of the house, and attitudes about off-block spaces. This sequence allows variables to enter in the order of their relevance, or proximity to, the territorial behavior in question. Only cognitions with a significant zero order correlation were entered. On the last step, we tested the assumption of homogeneity of regression by entering the covariate x Cognition interaction as a set.

The regression results revealed a clear tie between territorial cognitions and gardening in back. The cognitions, entered after the neighborhood covariate, accounted for an additional 13% of the outcome variance, and this increment was significant ($F(14,431) = 10.64$, $p < .001$). More specifically, increased gardening was associated with lower levels of territorial problems, and with easier distinctions between insiders and strangers. The cluster of variables including the covariate x cognition vectors failed to add a subsequent significant increment in explained variance, thereby supporting the assumption of homogeneity of regression. In sum, the territorial cognitions assessed revealed a sturdy linkage with territorial behavior. (More details on this particular analysis appear in Chapter 10).

Discussion

The clearest and perhaps the most important finding in the present study is that as perceived homogeneity decreases, problems which are related to a lack of control intensify in near-home territories (Figure 1). Underlying this linkage are probably socio-spatial agreements on who, doing what behaviors, can be where. These agreements may be more widely shared among residents who perceive themselves as similar to one another. Of course, such a suggestion awaits confirmation through careful future research. Nonetheless, this bond between social composition and territorial cognitions concerns issues related to control and lack of control, and thus it taps firmly into core issues of territorial functioning (Edney, 1975). Furthermore, the site of this linkage--near home territories--is significant. Altman (1975) and Newman (1972) have suggested that resident-based control over nearby, semi-public territories is critical for residential satisfaction. They point out that such control may be achieved through design strategies, or through territorial markers. The present results point toward the utility of social factors, as well, in achieving control.[5]

Although the connection between social composition and territorial functioning bodes several practical implications, it also invites further conceptual development between theories of group functioning and structures, and human territoriality. By and large, the main dimension of social structure examined by territorial researchers, has been dominance, e.g., Sundstrom and Altman (1974); Esser, Chamberlain, Chapple and Kline (1964). Only minimal attention has been given to other aspects of group functioning (e.g., Altman, Taylor, and Wheeler, 1971), in relation to territoriality. The present evidence invites a broader consideration of group structural properties in examinations of territorial functioning. Elements of group composition such as friendship and inter-

[5] In his most recent work, Newman (1979) has also paid attention to the role of social composition in fostering residential dominance over local spaces.

action patterns clearly deserve attention in future research. Broader cross-theoretical ties may not only further clarify territorial functioning, they may also help solve substantial problems in the area of group functioning. For example, the present results hint that informal social control in the residential environment, or group self-regulation, may operate indirectly through an enhancement of residents' territorial attitudes. This is only a glimpse, however, which awaits verification in future empirical investigation. Nonetheless, the main point is clear: a broader conceptual merger between human territoriality and group structure will result in a stronger attack on the problems of interest to each area.[6]

Turning attention to our other predictor of interest, neighborhood context, we see that it also modified territorial cognitions. In more stable neighborhoods fewer problems were perceived in near home territories. Also, across territories, stabler neighborhoods were associated with feelings of more responsibility. Admittedly, neighborhood stability (i.e., length of residence and homeownership) is bound up with other aspects of neighborhood composition such as income, especially at the aggregate level. Thus it is, strictly speaking, impossible to attribute the effects of the neighborhood factor to stability per se. Nonetheless, the length of residence pattern and homeownership pattern did differ as expected across the three types of neighborhoods. And neither of these correlated extravagantly, at the individual level, with income (rs, respectively, = -.08 and .27). In addition, blocks typical of the area were selected for the study, resulting in each type of territory being largely homogeneous within and across neighborhood types. We leave the job of disentangling the influences of components of neighborhood composition to future studies with appropriately stratified samples. In general though, the point is clear from the present study: neighborhood context does affect territorial functioning, and the important element of context appears to be stability.

Elaborating on our approach to territorial functioning, a few general comments are in order. We attacked functioning via cognitions or attitudes about specific territories. Although, in general, these cognitions do not explicitly inform us about the value or meaning attached to particular spaces, they do tell us about what the person expects to occur there, who he/she expects

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[6]Recent work by Baum, Shapiro, Murray, and Wideman (1979) has already proved the fruitfulness of such a merger for crowding research. They found that the aversiveness of living in crowded, tripled dorm rooms could be blamed on the instability of triads, and the main person who suffered in the triad was the one who was left out of the two-person coalition that emerged.

to see there, and how he/she expects people to behave there.[7] Over time, the cognitions and valence attached to a particular territory probably come into congruence, through a system-like process of mutual influence (cf. Altman, 1975). For example, through processes of adaptation and accomodation it is likely that, over time, problems experienced in a territory covary inversely with the spatial desirability, while responsibility covaries positively with the spatial desirability. Of course, for some people the value attached to a territory, and their expectations about what should happen there may never come into close alignment. Over time, these persons may continue to experience stress, and problems in maintaining smooth territorial functioning. But, our general expectation is that territorial cognitions, particularly those concerned with problems and responsibility do match, for most people,the values or meanings attached to particular territories over time. If a resident demarcates, through gardening, a particular space, it must have more value than the value another resident attaches to a comparable non-demarcated space. Thus, the ability of the cognitions assessed in this study to predict territorial marking behavior buttresses our expectation of such a match between cognitions and values.

In summary then, territorial cognitions, and, thereby, territorial functioning are influenced by social composition of the local social group. As perceived consonance increases, problems related to a lack of control decrease in near home territories. Neighborhood context also modifies territorial cognitions, sometimes exhibiting a conjoint influence with social climate. The important component of neighborhood composition appears to be stability. The present study has expanded our understanding of the social and situational determinants of territorial functioning in the urban residential environment, and has further underscored the utility and validity of assessing human territoriality via territorial cognitions.

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[7] The astute reader, who has also digested Chapter 2 on grouped data issues, may question whether or not the present results reflect differences between blocks, or, as we would like to believe, differences between people, We feel that the differences revealed in the ANOVAs on cognitions reflect differences between people because, in part, people were randomly assigned to different types of territories. Thus, at least with respect to main effects for type of territory and any interactions involving type of territory, blocks have been "broken up". Furthermore, the social variable we used, perceived social climate, did not enter the block-level regressions but did enter the individual-level regressions, (Chapter 5), suggesting that it operates mainly as an individual-level effect.

CHAPTER 8

Residents' Perceptions of Site-Level Features:

People, Problems, Planting, and Fences[1]

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The purpose of this study was to investigate how resident themselves perceived the relationship between site-level features, and aesthetic and behavioral outcomes. The features investigated included two defensible space features (fence, low barrier), two signs of appropriation (planting, ornamentation), and the presence or absence of a resident sitting out. A subsample of 40 Survey I residents, half of whom perceived their neighborhood as a high problem area, and half of whom perceived their neighborhood as a low problem area, where shown abstract pictures of backyards. In these pictures all possible combinations of site-level features appeared. The following results emerged: the presence of fence and planting indicated safer, better looking blocks, and blocks where intrusions were less likely; the presence of a resident sitting out deterred intruders, but the presence of the person was interpreted differently by high and low problem respondents; and, for low problem respondents (but not high problem ones) the deterrent value of a resident sitting out was minimal if a fence was present.

Introduction

Defensible space theory (Newman, 1972, 1979), as well as theories of human territoriality (Edney, 1976a), assume that elements in the physical environment influence behavior because people perceive those elements and respond accordingly.[2] Thus, the ultimate impact of (e.g.,) symbolic barriers or territorial markers depends upon the inferences people draw (Appleyard, 1973), or the way they filter (Rapoport, 1977) the information they receive. Furthermore, defensible space and territorial theories assume that particular physical elements may carry many messages simultaneously. For example, Newman (1979) suggests that symbolic barriers clearly indicate to outsiders a zone of transition between public and private property, an area where intruders must clarify their intentions, and a location where residents can feel safe, and leave out household items. Thus, physical elements may convey several items of information,

[1]Portions of an earlier version of this paper were presented by the second author at the annual meeting of the American Planning Association, Baltimore, October 1979, and at the annual meeting of the Environmental Design and Research Association (EDRA), Ames, Iowa, April 1981. The authors are indebted to Whit Drain and Don Sparklin who completed most of the interviewing.
[2]We do not preclude the notion that defensible space features can directly influence behavior (cf. Chapters 12 and 5), via their stimulus properties. Nonetheless, some defensible space features, such as symbolic barriers, depend heavily upon perceptions, for their ultimate behavioral impact.

and therefore be important on several counts. In the present research we investigate the perceptual impacts of site-level features, and thus test a critical assumption of defensible space and territorial theories.

Such an assumption received a modest test in a prior study by Taylor, Brower and Stough (1976). In that study line drawings, based on actual pictures, were used to investigate residents' perceptions of decorations, planting, and the presence of people. Respondents inferred from planting the presence of residents who cared and looked after their property. Respondents also expected that the presence of people would make the sidewalk safer, because someone would help out if there was trouble. But, at the same time, the presence of people caused problems like noise and litter. Also, on different blocks in the same neighborhood, respondents were in agreement concerning the inferences they drew from the features in the pictures. This prior study was limited in that respondents from only one neighborhood participated, and respondents from different neighborhoods might draw different inferences. Thus, in this prior limited study of Taylor et al. (1976), territorial markers were seen as a reflection of concern, and the presence of people was both a safety factor and a nuisance.

In that prior study defensible space features, such as real and symbolic barriers, were not included. One important component of the present study is the inclusion of such elements. An additional important feature of the present study is the inclusion of residents who live in different areas, and perceive either a high or low level of problems in their neighborhood. Perceptions of these two types of residents may be discrepant in several ways. First, there may be an across the board elevation effect, where high problem respondents indicate that crime-related outcomes are simply more likely. It is also possible that the impact of particular features may be differential across the two types of respondents. For example, respondents perceiving a high level of local problems may attend more to planting since it occurs less frequently in their area. Or, they may find combinations of features more desirable, compared to persons living in low-threat areas. Finally, high and low problem respondents may interpret the presence of residents differently. For example, the behavioral observation analysis (Chapter 9) suggested that on low crime blocks the presence of insiders was associated with trust between neighbors, and on high crime blocks the presence of insiders was associated with distrust between neighbors. In sum then, the present study represents an important extension of prior work in that defensible space features were included, and respondents who perceived varying levels of local problems were drawn from different areas.

Of course in designing the present study an important decision is which mode of presentation to choose. We opted for abstract line drawings, based on several considerations. First, it has been used in the past, and has been compared favorably against other techniques (Heald, 1978). In addition, line drawings allow the easy addition or subtraction of particular elements, thus easily accomodating various combinations of features. Third, the use of abstract pictures serves as a meaningful counterpoint to many of our other analysis in which we used ratings based on real photographs. Finally, with schematic or perspective drawings the respondent can more easily project, or imagine the picture as occurring on his/her block. Thus, on several counts, abstract pictures are commendable.

These advantages notwithstanding, we are fully cognizant of the limitations of a study based on ratings of abstract pictures. The external validity of subjects' responses is questionable. And, there is always the issue of stimulus adequacy--are the pictures an adequate representation of the actual environment? Nonetheless, these limitations do not detract from the use of this procedure as a testing ground for critical theoretical assumptions. The technique offers a straightforward and economical way to initially test some very important ideas. The results may be simplistic, but this is the price of achieving clarity at an early stage. Also, such tests may yield some very important and time-saving directives that will assist future, more complex assessments. Finally, this research may in and of itself yield findings which are quite significant, in the context of the other methods used and results obtained in the present study. In short, the procedure, albeit limited, has a very important role to fill in the context of present and future research.

A. Hypotheses

Based upon defensible space (Newman, 1972, 1979) and territorial theories (Brower, 1980), the following hypotheses were formed:
(1a) Real barriers such as fences, (1b) and symbolic barriers such as low curbing, should result in places that are seen as less likely to be invaded, and safer.
(2) Signs of appropriation such as planting and ornaments should result in places that are seen as safer, better looking, and have more vigilant occupants.
(3) Signs of appropriation, real barriers, and symbolic barriers, all reinforce the notion that an area is private property.
(4) The presence of a resident in an outdoor space should result in that space being seen as safer, and less likely to be invaded.
(5) Some elements are more effective than others in deterring unwanted intrusions. For example, barriers (fences) and the physical presence of a person to whom the property belongs may be stronger than symbolic barriers; and redundancy of signs may strengthen the message.
(6) Territorial signs must be viewed in context, i.e., the strength of physical and social features may vary inversely with the degree of perceived threat. Combinationsof features may also be viewed differently, depending upon the degree of local threat. (This hypothesis therefore calls for the testing of two- and three-way interactions.)

Method

B. Stimuli

Sixteen line drawings, depicting a typical backyard, were constructed. The drawings varied in the following way: fence present or absent, symbolic barrier (low curb) present or absent, planting present or absent, and ornaments present or absent. By combining every possible combination of these four features, sixteen drawings were generated. Another set of 16 drawings, identical to the first set except for the inclusion of a resident sitting out, were also produced.

The basic scene showed the backyard of a rowhouse which was the typical type of housing in the study areas. The house was at the end of the row, flanked by the sidewalk on one side, and adjoining unit on the other side, and an alley in the rear. A tree marked the corner of the yard where the sidewalk and alley joined. There were two approaches to entering the yard--from the sidewalk side and from the alley side.

C. Respondent Selection

A subsample of Survey I respondents were selected in the following manner. All respondents were split into two categories. Those with scores of less than 22 on total neighborhood problems (TOTPROB) were put into a "low problem" group. Those with scores of greater than 22 on total neighborhood problems were put into a "high problem" group. A random sample of potential respondents were then contacted by phone and asked to participate. Completed interviews were obtained from a total of 21 high problem, and 19 low problem respondents. Perceived level of neighborhood problems, i.e., threat, was felt to be an important variable on which to block subjects for several reasons. First, the present task required subjects to respond in the context of their own or similar neighborhoods. Thus, neighborhood characteristics could be expected to influence expectations of safety, defense, and crime-related behaviors. Second, previous research suggests that proprietary attitudes may covary with such neighborhood characteristics as levels of fear and crime. Finally, the pretest indicated that the characteristics of the local climate, specifically perceived level of neighborhood problems, tended to somewhat overshadow manipulated features of the stimuli, as a determinant of responses to the pictures.

D. Procedure

The interviewer arrived at the designated household, and explained that the purpose of the interview was to answer some questions that could not be addressed in Survey I. He also explained that the purpose of the interview was to obtain opinions about what would go on in back yards with varying physical characteristics. Respondents were randomly assigned to receive the set of pictures with the person, or the set of pictures without the person.[3]

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[3]Pilot testing in which the person was a within- instead of between-subjects factor, indicated that this factor garnered all of the subjects' attention, and led them to ignore other elements in the picture.

Respondents were then shown the appropriate set of 16 pictures, and all the various physical elements were pointed out. He/she was allowed to examine the set until he/she was familiar with them. Respondents were familiarized with a seven point rating scale.

Proceeding one question at a time, the respondent was shown each picture and asked to give it a rating. After he/she had rated all 16 pictures on a question, the interviewer moved on to the next question. The order of picture presentation was randomized for each question.

The respondent was first asked to rate the pictures on three general questions: (1) How much it looked like private property; (2) If it was an unsafe block; and (3) If it was a good looking block. For these three questions the respondent was asked to imagine that the pictures represented a house in a neighborhood similar to his/hers. The next set of three questions were concerned about behaviors that might occur: (4) How likely is it that a person would cut across the back yard to get to the alley; (5) How likely is it that a person living there would put a stop to somebody cutting across; and (6) If a bicycle was left out in the middle of the back yard, how likely is it to be stolen. For these last three questions the respondent was asked to imagine that the picture represented a house on his/her street. Within each set of three questions, order of presentation was randomized. For each question, the respondent indicated which feature was most important, and why.

Results

E. Analysis Overview

Our experimental design was a 2 (no ornaments/ornaments) X 2 (no planting/planting) X 2 (no fence/fence) X 2 (no symbolic barrier/barrier) X 2 (no person present/person present) X 2 (low problem respondent/high problem respondent), with repeated measures on the first four factors. The data from this mixed design were analyzed using analysis of variance by regression (Cohen and Cohen, 1975, Chpater 10). The reader is referred to Appendix A for a more detailed discussion of this approach.

The data were analyzed separately for each of the six questions asked. The intercorrelations between the six questions appear in Table 1. It is clear that the first three evaluative questions cluster together, as do the behavioral questions 4 and 6. Despite this pattern, we felt that conceptually clearer results could be obtained by keeping the questions separate and not combining them into scales.

F. Private Property (Question 1)[4]

Main effects for planting ($p < .01$) and for fence ($p < .001$) indicated that the presence of gardening, or of a fence, made a back yard look more like private property. A marginally significant ($p < .10$) main effect for curbing also indicated that the presence of this symbolic barrier added slightly to the appearance of a private property.

[4] For more detailed tables of results on this and other questions, see Appendix A.

Table 1 Correlations Between Questions on Abstract Picture Task

		Q01	Q02	Q03	Q04	Q05	Q06
Q01	Private Property	1.00	-.56	.67	-.29	.29	-.04
Q02	Unsafe Block		1.00	-.48	.31	-.24	.22
Q03	Good looking block			1.00	-.29	.32	-.07
Q04	Someone would cut across the back yard (S's block)				1.00	-.37	.58
Q05	Someone will stop person cutting across back yard (S's block)					1.00	-.22
Q06	Bicycle will be stolen (S's block)						1.00

In addition, although there were no main effects for the Problem or Person factors, a significant Problem X Person interaction ($p < .001$) emerged. The relevant means are displayed in Figure 1. Although low problem subjects saw a space as equally private regardless of the presence or absence of a person, high problem subjects indicated that the presence of a person detracted from the attribute of private property. One explanation for this unexpected finding may be as follows. For respondents who perceive a high level of local problems the presence of a resident may constitute a threat to privacy, either through his/her actions, or through his/her overseeing or overhearing the actions of others. For low problem respondents only, threat to privacy is in the form of physical intrusions. Thus, the presence of a resident is interpreted differently depending upon the level of local threat perceived by the respondent.

G. Block Safety (Question 2)

As hypothesized, real barriers and signs of appropriation connote safety: the analysis on the block safety question revealed main effects for the Fence ($p < .001$) and Planting ($p < .01$) factors.

Again, although there were no significant effects for the Person or Problem factors, a significant Person X Problem interaction emerged ($p < .001$). The relevant means are graphed in Figure 2. Again, as with Question 1, the presence of a resident is interpreted differently by high and low problem respondents. This differential interpretation may be related to either or both of the following notions. First, for low problem respondents a resident sitting out makes things safer because respondents know he/she will intervene if there is trouble or help is needed. For high problem respondents, however, a resident sitting out is a cause for concern because he/she will not intervene if there's trouble, and may even help start trouble. A second explanation would run as follows. High problem respondents could be thinking about the safety of the resident depicted, who is sitting out. And, in a high problem area, a person is always better off indoors than out. Of course, our explanations for this interaction are totally hypothetical at this stage. Nonetheless, the point remains that the presence of residents in outdoor spaces is interpreted differently by high and low problem respondents.

Results also produced a significant Person X Fence interaction ($p < .001$). Analysis of the separate means for high and low problem respondents indicated that the interaction applied solely to the latter group. When low problem respondents consider block safety, the presence of a resident is redundant (i.e., doesn't help) if there is a fence already present. For high problem respondents the presence of a resident is associated with a slightly more unsafe block, regardless of whether or not a fence is present. These relationships are displayed in Figure 3. In short, in the eyes of those who perceive a low level of local threat, real barriers may act very much as proxies for people.

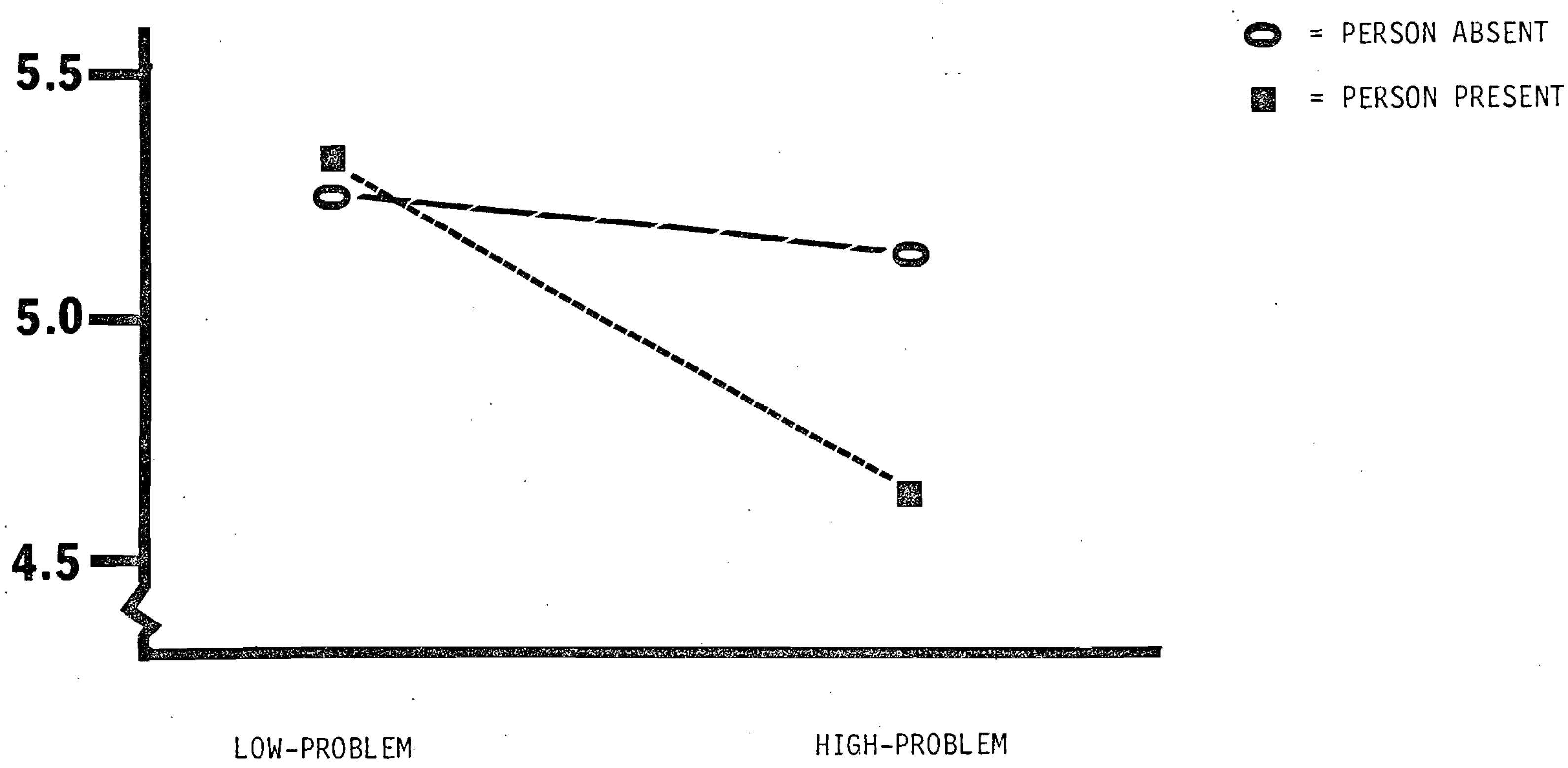
H. Good-Looking Block (Question 3)

Analysis for this question yielded the expected main effect for the Planting factor ($p < .001$), and a main effect for the Fence factor ($p < .001$).

FIGURE 1

Question 1: Private Property

Problem X Person Interaction



Thus, the aesthetics of an area can be improved by defensible space features, as well as by signs of appropriation.

Again, as in the prior two questions, although there were no significant main effects on the Person or Problem factors, a significant Person X Problem interaction ($p < .001$) appeared. The relevant means are graphed in Figure 4. Again, we have the suggestion that the presence of a resident is interpreted differently, being an aesthetic addition for low problem respondents, and an aesthetic detraction for high problem respondents. In addition, however, a Person X Fence interaction appeared ($p < .05$). The presence of these two, two-way interactions suggested the possibility of a three-way, Person X Fence X Problem interaction. We examined these means, and they are graphed in Figure 5. This figure suggests the following. For low problem respondents, the aesthetic addition of a resident is dampened somewhat if he/she occurs in conjunction with a fence. For high problem respondents, the presence of a person is a modest aesthetic detraction, regardless of whether or not a fence is also present. Thus, as with Question 2, for low problem respondents, defensible space features may serve as somewhat of a proxy for people.

Perhaps more importantly, the almost perfectly parallel results in Questions 2 and 3 underscore the linkage between appearance and safety. Factors that improve block safety are the same, and interact in the same way, as factors that improve appearance. These linkages support Hunter's (1978) contention that a disordered physical appearance contributes to fear, and the perception of lack of safety.

I. Intrusions (Question 4)

Results indicated that a person would be less likely to cut across the backyard if a person was present ($p < .01$), if there was a fence ($p < .001$), or if there was planting in the yard ($p < .05$). These main effects were qualified by a Person X Fence ($p < .001$) interaction. Inspection of the separate means for high and low problem respondents, suggested the following. For low problem respondents, the deterrent value of a person is diminished if he/she occurs in the presence of a fence. For high problem respondents, the deterrent value of a person was not conditional upon the presence or absence of a fence. Thus, again, as in Questions 2 and 3, in the eyes of low problem respondents, fences can serve as proxies for people, making the latter somewhat redundant.

Finally on this question a marginally significant main effect for Problem ($p < .10$) was observed, with high problem respondents indicating that intrusions were more likely.

J. Stopping Incursions (Question 5)

Respondents suggested that intruders were more likely to be stopped if planting ($p < .001$) or a fence ($p < .001$) were present. In addition to these two main effects, two, two-way interaction effects occurred. A Problem X Fence interaction ($p < .05$) suggested that low problem respondents, more than high problem ones, thought a person would respond to intruders if no fence was present. A Person X Planting interaction ($p < .05$) suggested that with the

FIGURE 2

Question 2: Unsafe Block
Problem X Person Interaction

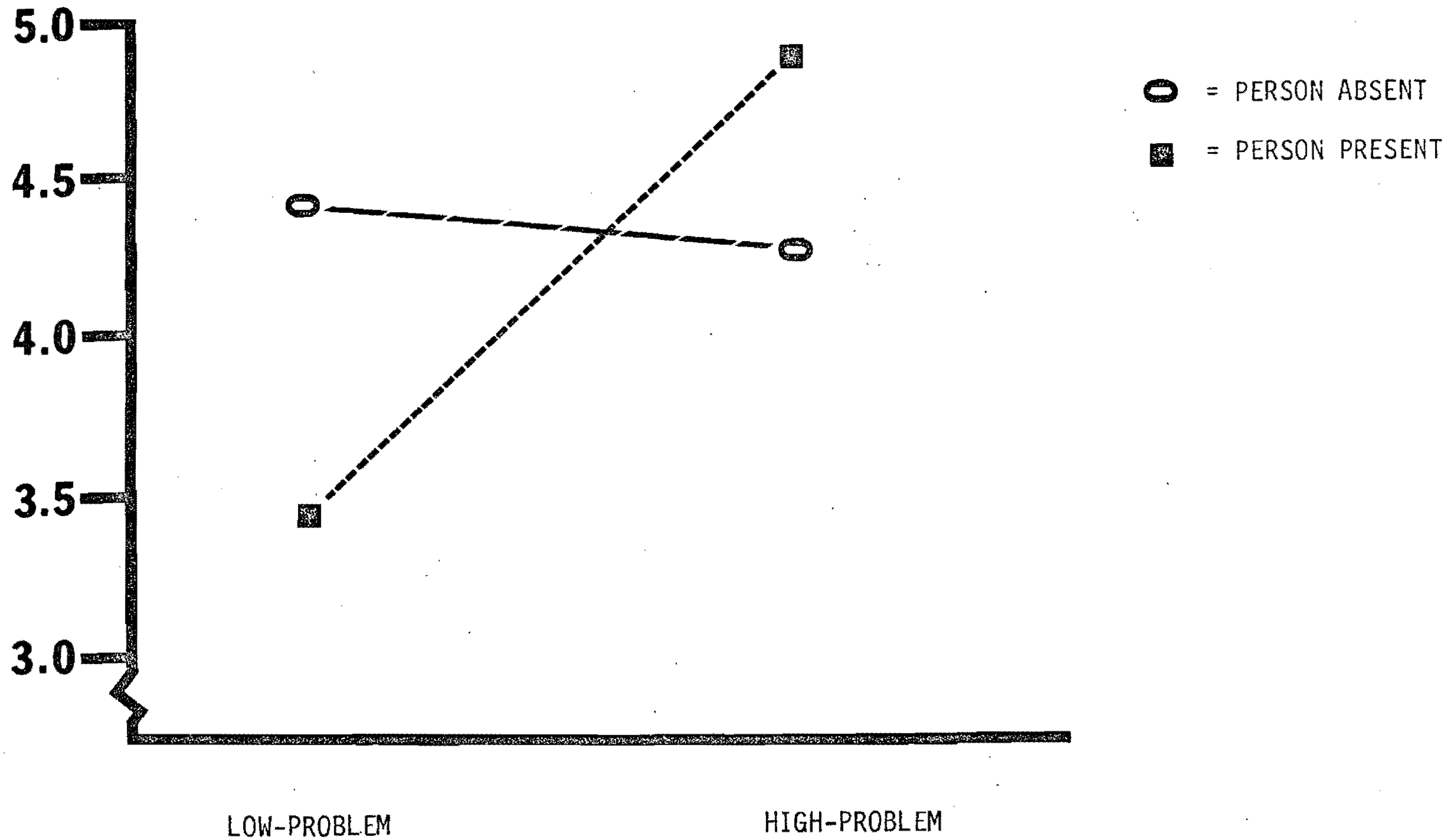


FIGURE 3

Question 2: Unsafe Block

Problem X Person X Fence

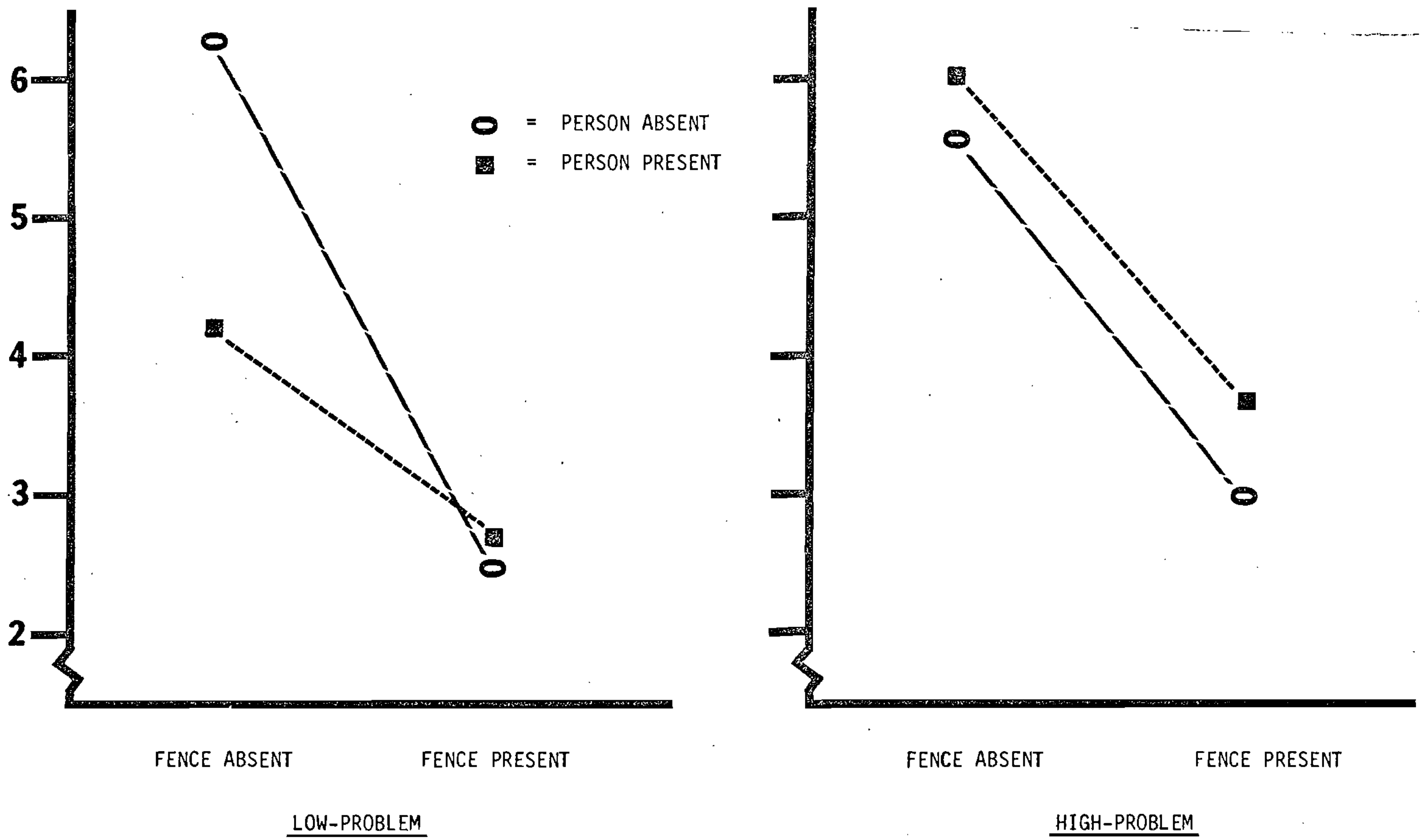


FIGURE 4

Question 3: Good-looking Block

Problem X People Interaction

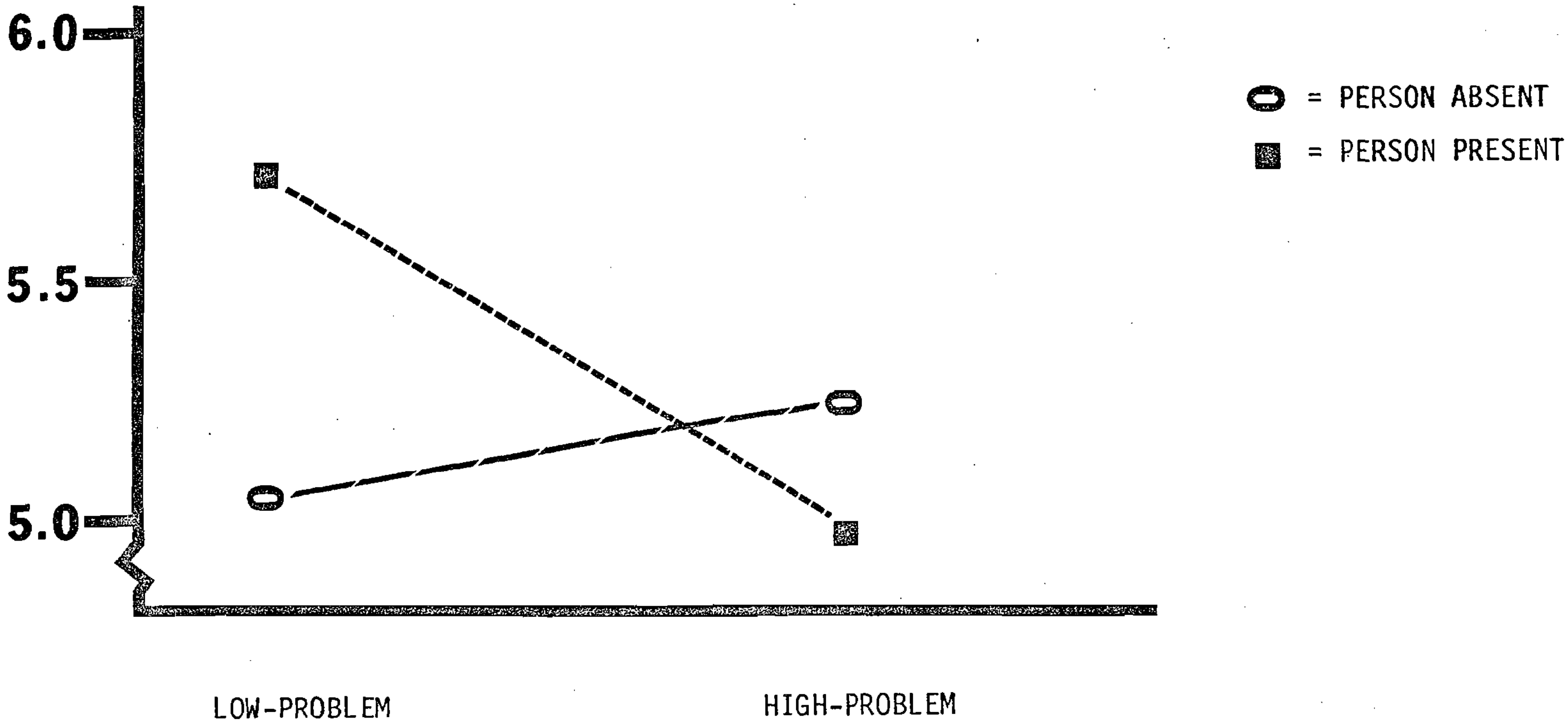
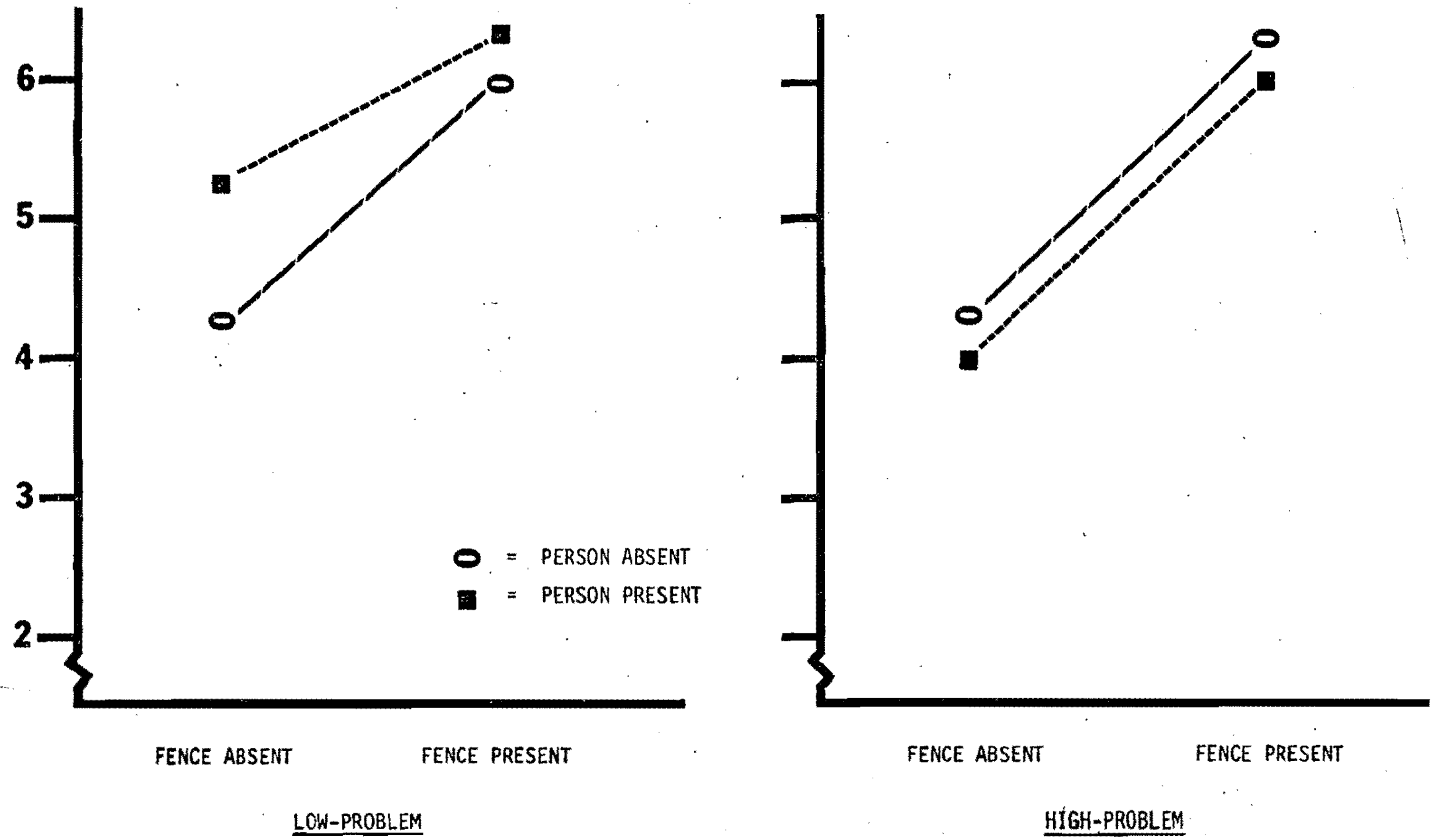


FIGURE 5

Question 3: Good-looking Block

Problem X Person X Fence



presence of planting, the deterrent power of a resident was reduced (Figure 6). That is, plants are to some extent proxies for people, supporting the claims of the latter and making them somewhat superfluous. Thus, when it comes to intervention, planting with no person sitting out is about as effective as a person sitting out. Inspection of the separate means for high and low problem respondents suggested that no three-way interaction was operating.

With regard to the two main effects for fences and planting, a reasonable explanation seems to be that fences and planting are strong indicators of private property: residents are clearly established as occupants with the right to control access. Furthermore, several respondents told us that if people have put a fence up, this indicates some concern on their part <u>about</u> trespassers, and thus, a likelihood of intervention.

K. <u>Deterring Bicycle Thieves (Question 6)</u>

A bicycle was less likely to be stolen if there was a resident sitting out ($p < .001$), or if there was a fence present ($p < .001$). A marginally significant main effect for planting ($p < .10$) indicated that if planting was present, a bicycle was somewhat less likely to be stolen.

In addition to these main effects, the following interaction effects were observed. A Problem X Fence ($p < .001$) interaction indicated that the fence was seen as a more effective deterrent by low problem subjects, suggesting that in high problem areas a fence is less effective in keeping people out. A Person X Fence interaction ($p < .001$) suggested that the deterrent power of a resident is diminished if a fence is already present. Inspection of the separate means for high and low problem subjects indicated, however, that this interaction applied only for low problem subjects, and an additive model was applicable for high problem subjects. This relationship is graphed in Figure 7. Thus, both of these interactions suggest that the expected ability of physical and social site-level features to deter serious intruders, is contingent upon the level of problems experienced by the perceiver.

<u>Discussion</u>

The findings help to explain the use of physical objects as territorial signs. Some of the explanations are totally hypothetical at this stage, but they raise issues that must be addressed to any theory of human territoriality, and suggest answers that are supported by separate findings in this study.

1. <u>The fence is a powerful security feature. The presence of a fence means that would-be intruders will have to make a deliberate effort to enter and that the occupant is determined to keep them out.</u>

The fence shows up with consistently high ratings as a delineator of personal property, as a sign of a safe block, and as a feature that discourages trespass in the interest of either convenience (a short-cut) or profit (burglary). Only the actual presence of the occupant provides deterrent of comparable strength to a fence, and only planting contributes as much to improving the appearance of

<u>**FIGURE 6**</u>

Question 5: Someone Would Stop Person Cutting Across

Person X Planting Interaction

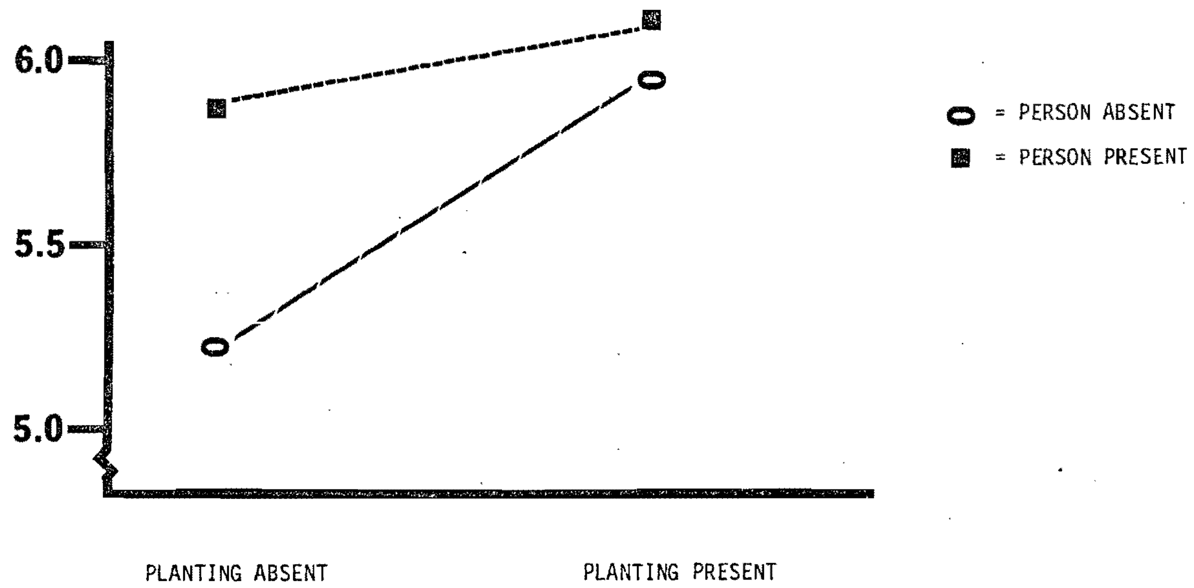
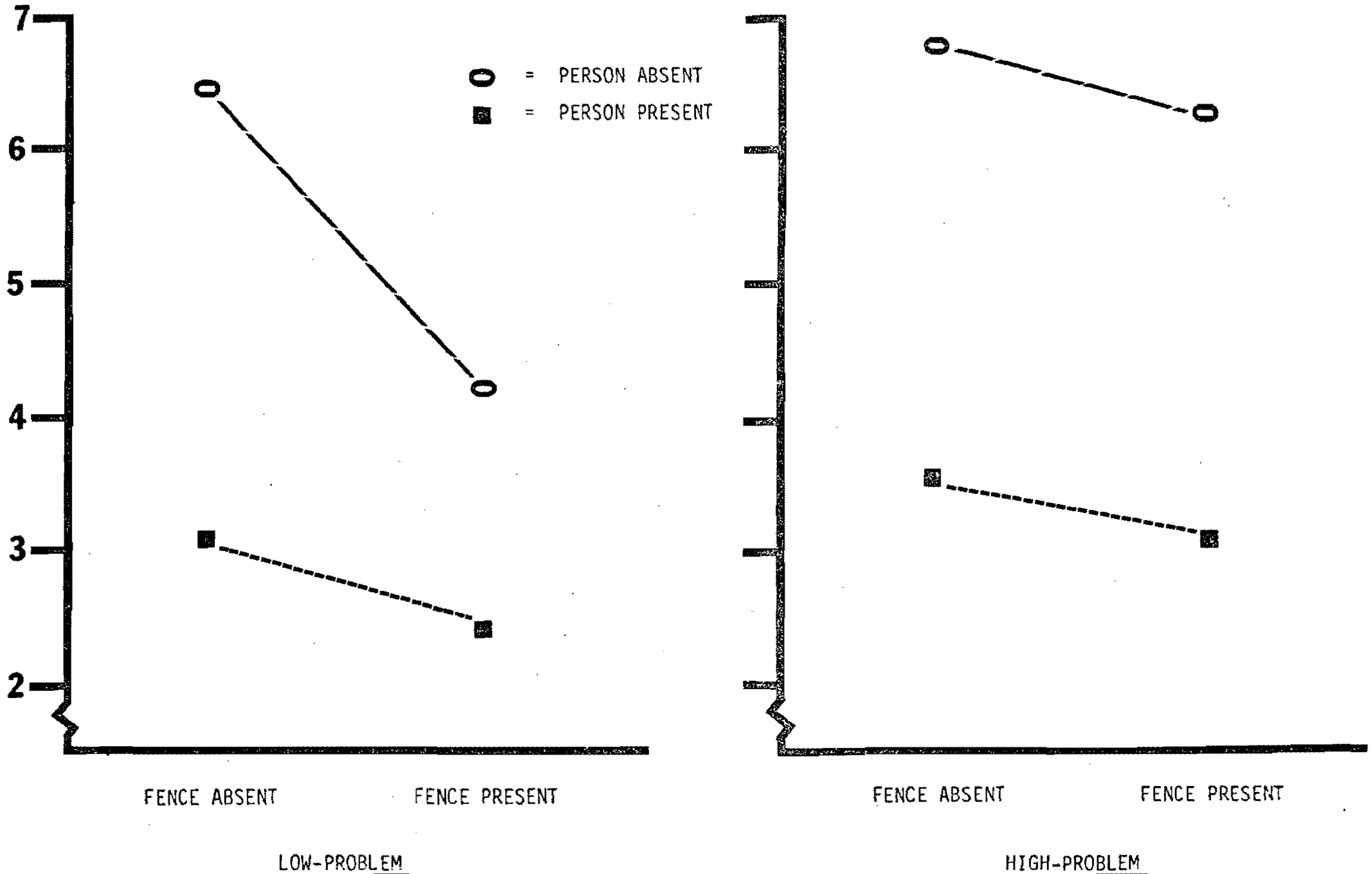


FIGURE 7

Question 6: Bicycle Stolen

Problem X Person X Fence



the block. The fence was mentioned, for one question or another, by twenty-two out of forty respondents - a higher ratio than by any other single feature. Reasons for mentioning the fence showed two general perceptions. The first was that the fence made a clear separation between private and public territories and it set up a physical obstruction to entrance into the private space. Therefore an uninvited presence would require explanation. The second general perception was that erection of the fence represented a deliberate effort on the part of an occupant to keep outsiders out. This suggests that the occupant would resent the intrusion of outsiders and would confront them.

It should be noted that the curb, which represented a symbolic barrier, did poorly throughout. It showed up strongest as a delineator of private space, and even then its effect was only marginal. It may be that the curb was weak as a defensible space feature compared to the fence, and weak as a sign of appropriation compared to the planting.

2. <u>Signs of appropriation are proven powerful security features if they reflect the continuing presence of the resident.</u>

To test the effectiveness of signs of appropriation, two features, ornaments and planting, were chosen. They were included because they occur frequently in the actual study blocks. We expected that in the presence of these features, respondents would perceive the space to be protected against intrusion. The results confirmed our expectations in the case of planting but not in the case of ornaments. Planting not only improved the appearance of the block and increased the likelihood that residents would intervene to stop intrusion, but it also signalled private property, discouraged people from cutting across, and made the block look safer. Planting even seemed to discourage would-be burglars, although the effect here was weaker.

In order to understand why it is that planting was such a powerful territorial sign, and display of ornaments was not, it is necessary to compare and contrast the two features, particularly as they are represented on the stimulus drawings.

One obvious point is that, while ornaments were represented by three isolated elements, planting incorporated a continuous surface texture from the boundaries of the site to the edges of the entrance path. Planting, then, defined the extent of the site and the location of the access points. In this it was comparable to the curb feature. But the curb feature performed poorly, and so it does not seem to be because of its edge-defining properties that planting received such high ratings.

Another difference between the planting and ornamental features is that, while one plant is very much like another in terms of social significance, ornaments tend to have class connotations. The ornaments shown on the drawings (a witch ball, pottery cat, and small awning) are in Baltimore associated with working class areas, and it is possible that any comfort derived from their presence may have been neutralized by a message that this was a crime-prone neighborhood. The validity of this argument is put to question by the results of two separate studies. When photographs of study sites in low and middle income areas were evaluated by planners and students, the evaluators paid little attention to ornaments, but a good deal of attention to gardening. (See Chapter 10.) Photographs of all the study blocks were rated on a number of characteristics including ornaments and planting (a wide range of ornaments were considered in the rating scale) and the ratings were then compared with actual reported police calls for service. It was found that the presence of ornaments was not useful as a predictor of crime-related outcomes. There was, however, a significant correlation between gardening and crime-related outcomes.

A third difference between ornaments and gardening, and one that we think is especially significant, derives from respondents' comments that planting implied that a resident was concerned about and cared for the property. As signs of care, ornaments are not necessarily typical. They certainly reflect an investment of interest and energy, but the investment may have been made by the landlord or by a previous occupant. Planting, on the other hand, if it is well maintained (and the uniform fine texture of the grass in the drawings suggested good maintenance) implies an investment that is continuing and current, which means that the present resident has an investment in the property and will be on guard. The importance of care as an assurance of security is further supported by the fact that several respondents who gave high ratings to the fence, did so because they said a fence made it easier to keep the property neat and clean.

3. Physical features by themselves are less effective as territorial signs when they are in high threat situations.

In some situations a particular physical feature was a powerful influence on outsider behavior but, in other situations, the same feature was relatively ineffective. Territorial signs became less powerful when the outsider's will to trespass was more serious, and when there was an established pattern of ignoring territorial claims. Territorial signs in an orderly society served as a proxy for the resident, but in less orderly locations these signs had to be supported by the physical presence of the resident.

The presence of planting, for example, had a significant effect on preventing people from taking a short cut across the yard. A short cut is a convenience and not really a matter of urgency. When there was a tempting reward associated with trespassing, however, like the chance of acquiring a ten-speed bicycle, planting was far less effective as a deterrent.

A fence was the most powerful of all the physical features tested. In low problem areas,[5] that is, areas where residents could expect that people would maintain a high standard of civil behavior, the fence was so effective that the addition of the resident in person was unnecessary. In the assessment of private property, block safety, the chances of someone cutting across the yard, and the chances of the resident intervening, the addition of a person contributed hardly anything. Even in the case of the would-be bicycle thief, the contribution was only a modest one. But in high problem areas, where a lower level of civil order prevailed, the performance of fences was far weaker, and the presence of the resident contributed significantly to the power of the territorial message. This pattern of results provides a clear confirmation of Brower's (1980, p. 190) suggestion that under high levels of threat, stronger, more redundant territorial displays become necessary.

4. <u>Physical features function not only to keep outsiders out, they also make residents more possessive.</u>

While physical features influenced the territorial behavior of outsiders, the study suggests that they also influenced the behavior of the residents. High-problem respondents were more ready to stop someone who tried to cut across the yard if the yard was fenced. Apparently the presence of the fence emboldened the resident while informing outsiders that this was really "home" territory. It also carried the message back to the sender. In a similar way, a person sitting in the yard was more likely to stop someone from trespassing if the yard had been planted. Physical elements functioned not only as signs of appropriation directed toward outsiders, they also strengthened the residents' own sense of possession and provided additional justification for defensive action.

5. <u>The presence of a resident sitting out in the yard has very different security implications for low and high problem respondents.</u>

For low problem respondents, a yard with the resident sitting out meant a safe block. The presence of the resident contributed as much to block safety as adding a fence. Apparently, the resident was seen as a defender of the

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[5] Equating low-problem respondents with low-problem neighborhoods and high-problem respondents with high problem neighborhoods is not altogether accurate, but is a simplification in the interest of clarity that we believe does not affect the validity of the analysis. The actual breakdown of respondents by the neighborhood type in which they live is as follows:

Neighborhood Type	Hi-Problem Respondents	Low-Problem Respondents
1 (low income, mostly rental)	14	3
2 (mixed)	3	7
3 (middle income, mostly owned)	4	9
TOTAL	21	19

space who would keep out intruders, discourage would-be thieves and generally make the block more secure.

This was generally what we expected to find. High problem respondents, however, produced unexpected results. For high problem respondents, the presence of a resident sitting out both with and without a fence, meant a more unsafe block. The probable explanation is that high problem respondents, projecting the image of an unpredictable and sometimes violent environment where a fence could not be relied upon to keep even casual trespassers out, saw the resident sitting out as a potential victim. Sitting out endangered the residents themselves; thus blocks with everyone indoors were rated as safe.

Another set of findings was as divergent and more puzzling. Low problem respondents indicated that the presence of a resident sitting out did not affect whether the space looked like private property or not. Privacy could apparently be achieved with physical means alone - mainly with fences and planting. High problem respondents, however, saw a person sitting out as making the yard less like private property. We offer the following explanation. Respondents interpreted the phrase "look like private property" to mean "looks as if it affords privacy." Low problem respondents projected an image of an orderly environment. For them, privacy could be achieved by keeping outsiders out, and this could be done satisfactorily by means of fences and planting. High problem residents projected a noisy, disruptive and threatening environment. When no one was sitting in the yard, privacy meant keeping outsiders out of the space, and here again, fences and planting performed their function quite satisfactorily. But when someone was sitting out in the yard, there were additional intrusions upon privacy that had to be guarded against. These intrusions, like littering, fighting, bad odors, interfering neighbors, etc., could not be eliminated with fences or planting.

6. Territorial qualities of physical objects have an influence on aesthetic judgment.

When respondents were asked to rate blocks according to how good-looking they were, the features that emerged as most important were fences and planting.

It was expected that planting would make a good showing because there is general agreement that plants are pleasing to the senses. The high rating received by the fences was, however, less expected and requires an explanation. One explanation is that the fence shown on the drawings is a particularly good-looking one. This is probably true, especially in the eyes of residents accustomed to chain link fencing. But this explanation does not explain some of the other findings. Low problem respondents thought that the presence of a person sitting out in the yard made the block better looking; high problem respondents thought the same feature made the block less good-looking. Low problem respondents thought that adding a fence improved the appearance to such an extent that their adding a person made little difference to the overall appearance; high problem respondents thought that the presence of a person diminished the appearance of the block whether fences were present or not. These findings parallel so closely the responses to the "safety" and "private property" questions as to suggest that they are not independent. The correlation matrix (see Table 1) shows that responses to these three questions cluster together. It is unlikely, especially among high problem residents, that judgments based purely on aesthetic qualities would drive their responses to the security questions. It is far more likely that they would consider a secure environment to be also visually satisfying.

It appears then that, a more secure-looking block was judged to be better looking. Aesthetic judgments were not based upon abstract qualities of form and shape alone, they took into account the social significance of the elements being evaluated. In a residential environment, the appearance of security was significant indeed.

Appendix A

Analysis and Results

As mentioned in the text, our design was a 2 x 2 x 2 x 2 x 2 x 2 with repeated measures on the first four factors (ornament, planting, fence, and barrier), and with the last two factors being between-subjects factors. Since it was a factorial design, all our predictor variables were uncorrelated. We chose to submit the data to analysis of variance by regression, as described by Cohen and Cohen (1975, Chapter 10). Of course, an alternative would have been multivariate analysis of variance (MANOVA). We felt that MANOVA was undesirable because, by analyzing our six outcome questions conjointly, or even by analyzing each set of three conjointly, considerable clarity would be lost, and results would be difficult to interpret. In addition, the size and nature of our design exceeds the capacities of many MANOVA programs. (With subjects as a factor, with 10 levels, we have over a 100 cells in the design). We should emphasize, however, the results obtained through multiple regression are exactly equivalent to those obtained through univariate analyses of variance.

The basic steps in analysis of variance by regression are as follows: (1) For each outcome variable, its variance is divided into between subject, and within subject portions. Between subject variance is equal to the variance of subjects' averaged ratings, collapsed across pictures. The percent between subject variance thus equals $\sigma^2_{average}/\sigma^2_{total}$. Within subject variance is (1-% between subject variance). Once these partitions have been made, the analysis of between and within subject variance proceeds accordingly. (2) In analyzing between subject variance, outcomes of interest are, again, each subject's averaged score, collapsing across pictures. Main effects are entered on the first step, and the interaction term (Problem X Person) entered on the second step. The computer output from this analysis is correct as it stands. (3) Analysis of within subject variance is as follows. Within-subject factors are entered on the first step, between subject factors on the second step, and between X within and within X within interactions on subsequent steps. Results must be adjusted because the program always thinks it is trying to predict 100% of the variance, whereas all it is really trying to do is predict the within subject variance, which is less than 100%. Thus, error terms for F-tests for increments in R^2, and t tests for β weights must be adjusted.

The results from our analyses using these procedures appear in the following tables. In Table A-1 the results of our partitioning are displayed. It is interesting to note that for our general, evaluative questions (1-3), the percent between subject variance is very small. For the specific behavioral questions (4-6), however, the proportion of between variance is much more substantial.

The results of the analysis of main effects for between-subjects factors (Problem, Person) appears in Table A-2. For each factor the meaningful information is the t statistic, which provides the same test as an F (t^2 = F, with the present data). The B weight is also important because this indicates the mean difference, on the outcome question, between the group dummy coded "1", and the group coded "0, 0"; in this case the low problem person absent group. (All the main effects were dummy coded predictors). The % variance explained by each factor also appears, under R^2, to the left of the table. The F-test for the cluster, i.e., the two main effects, appears to the right of the table. This indicates whether or not the cluster itself adds a significant increment in R^2.

The results for the between-subject interaction effect on each question appear in Table A-3. The t statistic tells us if these interaction effects are significant. In the case of dummy X dummy interactions the B statistic is not meaningful; the means in each of the four cells of the interaction must be examined if we wish to interpret the interaction effect. Also, to the right of the table new F tests for Questions 1-3, for total R^2 are computed, to determine if the main effects plus the interaction effect, account for a significant amount of variance.

The results of our analyses of within subjects factors appears in Table A-4. Reading from left to right the organization of the table is as follows. First, we indicate the amount of within subject variance explained by the cluster of four main effects, and the F associated with that R^2. Then the variance explained by each variable in the cluster is indicated. The t statistic tells us whether or not each main effect is significant, and the B weight tells us the mean difference between that group and the reference string (no planting, no ornaments, no fence, no barrier). Moving further to the right on the table, the variance due to the cluster of interaction effects that were added, and the concomitant F-test, appears. The following interactions were allowed to enter: Problem X Fence, Problem X Planting, Problem X Ornament, Person X Fence, Person X Planting, Person X Ornament. Within the cluster, the interactions were entered step-wise, according to their partials. The last columns on the right of the table indicate which particular interaction terms achieved significance, and how much variance they explained. Again, to interpret these interactions we must investigate the pattern of four means within each term.

Table A-1

Abstract Picture Task

Question	Total σ^2	Between-Subject σ^2	% Between Subject σ^2	% Within Subject σ^2
1. Private Property	3.882	0.853	21.97	78.03
2. Unsafe Block	5.022	1.447	28.81	71.19
3. Good looking block	2.977	0.679	22.81	77.19
4. Someone would cut across	6.562	3.979	60.64	39.36
5. Someone will stop person cutting across	3.432	2.073	60.40	39.60
6. Bicycle will be stolen	6.737	5.603	83.17	16.83

Table A-2

Main Effects for Between

Subject Factors

Question	Factor	R^2	β	Beta	t	Total R^2	F
Q01: Private Property	Problems	.058	-.43	-.23	-1.54		
	Person	.017	-.24	-.13	<1		
						.075	$F(2,37)=1.50$, $p<.10$
Q02: Unsafe Block	Problems	.068	.63	.26	1.72		
	Person	.003	-.14	-.06	<1		
						.071	$F(2,37)=1.72$, $p<.10$
Q03: Good-looking Block	Problems	.026	-.28	-.17	1.08		
	Person	.012	.18	.11	<1		
						.038	$F(2,37)=$ <1, NS
Q04: Someone would cut across	Problems	.064	1.10	.28	2.01^{+}		
	Person	.186	-1.72	-.43	-3.14^{**}		
						.250	$F(2,37)=6.18$, $p<.01$
Q05: Someone would stop person cutting across	Problems	.013	-.35	-.12	<1		
	Person	.020	.41	.14	<1		
						.033	$F(2,37)=$ <1, NS
Q06: Bicycle will be stolen stolen.	Problems	.023	.87	.18	1.50		
	Person	.381	-2.92	-.62	-5.05^{***}		
						.405	$F(2,37)=12.57$, $p<.001$

Note. $+ = p < .10$, $** = p<.01$; $*** = p < .001$.

Table A-3

Abstract Picture Task

Between Subjects Interaction Effect:

The Problem X Person Interaction

Question	Increment in R^2	B	Beta	t	Total R^2 and F
1. Private Property	.023	-.56	-.27	4.00***	.098 $F(3,36) = 1.30$
2. Unsafe Block	.102	1.54	.57	8.85***	.173 $F(3,36) = 2.51$
3. Good-looking Block	.080	-.94	-.51	7.61***	.118 $F(3,36) = 1.61$
4. Someone would cut across	.000	.037	.01	<1	.250 $F(2,37) = 6.17$*
5. Someone would stop person cutting across	.000	.035	.01	<1	.33 $F(2,37) < 1$
6. Bicycle will be stolen	.004	-.58	-.11	2.00^{+}	.404 $F(2,37) = 12.54$**

Note. F tests for total R^2 with 2 df in numerator, ignore increment due to nonsignificant interactor.

ABSTRACT PICTURE TASK

Table A-4

RESULTS FOR WITHIN SUBJECTS MAIN EFFECTS AND

INTERACTION EFFECTS

Question	Main Effects R^2 for Cluster	F	Variable	R^2	B	t	Interaction Effects R^2 for Cluster	F	Variable	R^2	B	t
1. Private Property	.568	$F(4,27) = 9.18$***	Ornament	.005	.35	1.58	.014	$F(6,27)<1.0$	Problems X Planting	.007	.59	2.32+
			Planting	.072	.60	2.71**						
			Fence	.483	2.05	9.29***						
			Barrier	.008	.31	2.40+						
2. Unsafe Block	.496	$F(4,28) = 7.34$***	Ornament	.001	-.28	1.10	.031	$F(5,28)<1.0$	Person X Fence	.027	1.22	4.16***
			Planting	.011	-.61	2.93**						
			Fence	.483	-3.36	13.22***						
			Barrier	.000	-.08	< 1						
3. Good Looking Block	.437	$F(4,27) = 5.39$**	Ornament	.008	.31	1.42	.018	$F(6,27)<1.0$	Problem X Fence	.009	.59	2.33*
			Planting	.118	.91	4.16***						
			Fence	.308	1.54	7.02***						
			Barrier	.002	.13	1.00						
4. Someone Would Cut Across	.437	$F(4,29) = 5.95$**	Ornament	.000	-.04	< 1	.031	$F(4,29)<1$	Person X Fence	.027	1.06	3.99***
			Planting	.016	-.54	2.35*						
			Fence	.421	-2.68	11.72***						
			Barrier	.000	-.05	< 1						
5. Someone Would Stop Person Cutting Across	.274	$F(4,27) = 2.67$+	Ornament	.002	.13	< 1	.029	$F(6,27)<1$	Person X Planting	.014	-.56	2.54*
			Planting	.045	.73	3.84***						
			Fence	.226	.88	4.65***						
			Barrier	.000	.07	< 1			Problem X Fence	.014	.55	2.50*
6. Bicycle Will Be Stolen	.221	$F(4,27) = 2.21$+	Ornament	.001	-.02	< 1	.102	$F(6,27)<1$	Person X Fence	.037	.82	4.14***
			Planting	.006	-.34	1.96+						
			Fence	.214	-1.91	11.18***						
			Barrier	.000	-.04	< 1			Problem X Fence	.060	1.00	5.05***

Note. All F tests use a Modell II error term. All t-tests are 2 tailed. T-tests are with 38 degrees of freedom.
+ = $p < .10$; * = $p < .05$; ** = $p < .01$; *** = $p < .001$.

CHAPTER 9

BEHAVIORAL OBSERVATION PROFILES: THE RELATIONSHIPS BETWEEN OUTDOOR ACTIVITY PATTERNS, BLOCK CHARACTERISTICS, AND CRIME-RELATED OUTCOMES [1]

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Behavioral mapping techniques were used to record behavior in outdoor spaces on a subsample of Survey I blocks. Drawing on ecological psychology, it was suggested that in several respects blocks may be like behavior settings. We used this suggestion, as well as expectations based on our general model, and on recent density research, to guide our analysis. The following results were obtained. Across all blocks, the gathering of large and variable groups on sidewalks is associated with fear. Density is higher on high-crime as compared to low-crime blocks. On low-crime blocks, the presence of insiders supports resident-based control, while outsiders detract from it. On high-crime blocks, however, insiders have negative effects and outsiders have positive effects. This latter finding is supported by other data from this, as well as other studies. High- and low-crime blocks show different patterns of variation across times of day. We conclude that behavioral profiles are indeed relevant to resident-based control, although in not as straightforward a manner as had been envisioned. And, theories and programs concerned with fear, crime, and problems, need to incorporate, model, and understand context-specific attitudes toward the presence of co-residents and strangers.

Introduction

A. Chapter Organization

We open with a brief consideration of behavioral observation techniques in general, and the role they have played in sociological and psychological research, in natural environments. The following section discusses the role of behavioral observation in studies, such as ours, concerned with informal social control, territoriality, and crime-related outcomes. Drawing upon the theoretical tradition of ecological psychology, we propose that block-level behavioral profiles may be interpreted as constant or standing patterns of behavior, and that the variability which appears in this profile may be related to the difficulty of establishing informal rules about use of outside spaces. Next, we describe our rationale and procedure for selecting a subsample of blocks as behavioral observation sites, and discuss the characteristics of the blocks themselves. A brief description of observation techniques follows. We then

[1] The authors acknowledge the extensive programming assistance of Shahir Kassam and Mark Keintz, and the helpful comments of Lois Verbrugge regarding issues of site selection. Ken Williams and Denise Julian served ably as our summer observers, and we are indebted to them for the care, reliability, and perseverance they devoted to the task. Whit Drain, Ed Stoloff, Liz Meyer, and Chris Bartlett also cheerfully carried out observation duties.

examine various components of the block observation profiles, to determine how high police activity blocks differ from low police activity blocks. Volume, profile variation, location of persons, age and sex differences, and insider/outsider distinctions come under scrutiny. In a finer-grained analysis, we then examine the relationships between block means based on survey data, and components of the behavioral observation profile. Rough sketches of each block's behavioral profile are then provided. We then attend to the issue of seasonal variation, and consider how this influences and modifies the observation profiles. A short digression follows on methodological problems and prospects with this type of data. Finally, we close with a discussion of results and some conclusions.

B. Past Uses of Behavioral Observation Techniques in Natural Settings

A wide range of behavioral observation techniques have been applied to a variety of theoretical issues in sociology and environmental psychology. The techniques themselves vary markedly in terms of their level of systematization, observational rigor, and complexity of coding schemes. Furthermore, the techniques are apt for illuminating a range of conceptual problems.

An example of the use of methodologically simple but conceptually complex techniques is participant observation, as found in Suttles' (1968) work in a west-Chicago neighborhood. The procedure involves an observer moving into and integrating himself into a local community, and then religiously recording his/her field notes at the end of every day. The complexity comes in inferring some general behavioral outlines from a welter of detail. The resulting constructs (e.g., Suttles' notions of ordered segmentation, or temporal sharing of resources located on the boundaries of adjoining territories) may be quite powerful, and may later prove quite generalizable. The researcher may choose to further inform his observations by supplementing them with modest surveys, as Gans (1967) did in The Levittowners. Unfortunately, open-ended techniques such as these require a very competent and attentive person to observe and synthesize, and lead time for that person to become integrated into the community of interest.

Moving on to somewhat more systematic observation procedures, we encounter techniques that record simple categories of behavior, and their location. This approach has proved useful both in the analysis of indoor and outdoor sites. Examples of the former include observations made by Ittelson, Proshansky and Rivlin (1970a, 1970b) on psychiatric wards. Their procedure included the division of a ward into distinct spatial units, and the use of fairly simple categories of activity such as isolated passive, isolated active, interacting, etc. (Ittelson, Rivlin, and Proshansky, 1970). With such a technique they were able to unearth some fairly stable relationships between behavior patterns and location. For example, Ittelson et al. (1970a) noted that patients in multiple-occupancy bedrooms engaged in almost twice as much isolated passive behavior (45%), as patients in single-occupancy bedrooms (25%), and that when a patient was in a multiple-occupancy bedroom, others were not likely to enter. Unfortunately, as the authors note, there are several possible competing interpretations of this last finding, and it is not clear which interpretation is correct. This is a typical shortcoming of this form of behavioral observation. Unless it is supplemented by additional data, it is difficult to clarify or explain some of the patterns which may appear. Nonetheless, analyses of interior settings using such observations continue, and have proven profitable in settings such as children's hospitals (Wolfe, 1975), and day-care centers (Rivlin, 1978). McGrew (1972) has further elaborated these techniques, focusing on categories of children's behavior that are meaningful from an ethological perspective, and Hutt and Hutt (1970) discuss observational techniques for experimental situations.

In the outdoor environment, there are several examples of the use of these moderately complex techniques, and some of these instances were in studies conceptually related to the focus of the present project. A study by Kohn, Franck, and Fox (1975) for example, was concerned with the relation between physical modifications incorporating defensible space features such as fences and curbing, and residents' behavior. The settings they investigated were low-rise public housing projects. An observation schedule, route, and coding categories were developed. Residents' behaviors were recorded before and after the modifications occurred. They found, for example, that territorial behaviors such as gardening were not influenced by the modifications. Rather, gardening was an annual event that about half of the sample engaged in.

Another example of the use of this technique comes from a recent study of use of inner city open space (Brower, Stough, Headly, and Gray, 1976; Brower and Williamson, 1974; Brower, 1979, 1980). The purpose of this study was to document changes in use patterns as physical and social changes, which were designed to promote park use, were instituted. Resident observers were hired. They made regularly scheduled tours of the areas in each study block, noting who was doing what, where. The researchers found that use of park space was low, but that changes such as providing space for gardening, or assigning an environmental manager to the site, could temporarily promote increased levels of park use. In this study observation was supplemented with survey data. Needless to say, the latter was helpful in interpreting the former.

To summarize then, the operation and evaluation of these behavioral mapping techniques is as follows. The procedure involves developing codes that are few, and do not require the interpretation of behavior; segmenting the location into discrete units; and generating an observation schedule. The procedure boasts several advantages such as ease of training reliable observers, and efficient coding of a large number of activities in a fairly short time span. There are, however, two serious disadvantages of these techniques. First, although they permit fairly accurate description of behavior patterns, they do not help explain or interpret these patterns. Interpretation rests on supplementary insight, or complementary data obtained from interviews or informants. Second, processing of the data generated from these procedures can be an awkward and expensive enterprise. Nonetheless, as we shall see, the data from these categorized observations are much less complex than the third type of observational techniques we will consider.

The triad of techniques is rounded out by procedures which record the stream of behavior. This is the most complex, and the most theoretically grounded, of the available observation techniques.

The conceptual underpinnings for stream of behavior research lies in Barker's (1963a, 1968 ; Wicker, 1979) ecological psychology. He has suggested that there is an inherent structure to the existing human environment. Spatially, the environment is naturally organized in terms of behavior settings, and this very useful concept, and its corollaries, are explored more fully a bit further on in the chapter. Temporally, the human environment is organized in terms of streams of behavior. As Barker (1963a) explains, each of us throughout our waking hours, is constantly emitting a stream of behavior. The stream of each person contains considerable variation. This diversity is not "error"; rather, it is of inherent interest. Furthermore, each stream can be divided up into natural units, or episodes. Observers can be trained to attend to reliable cues which mark the beginning and ends of episodes. Perhaps more importantly, streams of behaviors are lawfully associated with behavior setting characteristics. Barker and Wright (1951) observed that a child's behavior in a particular setting on a particular day was more similar to his behavior in that setting a year later, than it was to his behavior in other settings on that particular day. Thus, investigating how natural behavioral units, such as episodes, relate to behavior settings, leads toward an understanding of environment-behavior relations while at the same time imposing a minimal degree of experimenter bias.

Wright (1967) outlines the mechanisms for actually recording and coding streams of behavior. Data collection is straightforward. Attending to one person, the observer records that target's behaviors for a period of time. For example, if a person's behavior in one setting is recorded, a setting record is generated. (Massive volumes of data can be generated with this technique.) In most cases some relationship between the target person and the recorder is established prior to the observation period. Thus, intrusiveness is minimized and the behavior of the target is not unduly influenced. The coding phase is somewhat more intricate. Observers are trained to segment the stream into its natural episodes, by following particular cues.

It appears that the training involved in turning a person into a first-rate observer and coder can be considerable, and therein lies the major disadvantage of this route. Nonetheless, for some purposes, the costs appear justified by the results--an accurate, reliable, fine-grained analysis of behavior, which throws the natural structure of the behaviors into relief.

Given the advantages and disadvantages of the three observation techniques just discussed--participant observation, behavioral mapping, and stream of behavior analysis--we chose the behavioral mapping technique to use in the present study. Our choice was through a process of elimination. Both the participant observation approach and the stream of behavior approach required the availability of trained observers, and the time to integrate him/her into the relevant communities. We had neither the people nor the time. In addition, the stream of behavior approach would have provided a much more fine-grained picture than we desired. We sought to understand block-level behavioral dynamics, and the stream of behavior analysis would have informed us instead about individual-level behavioral profiles. Thus, we opted for scheduled, categorized behavioral mapping.

C. The Conceptual Role of Behavioral Observation in Studies of Crime-related Outcomes

The outcomes of interest in the present study fall into three clusters: police activity, fear, and nuisances. The latter two clusters are estimated using results from our survey data. Furthermore, the survey also informs us about residents' behaviors, and aspects of the block climate that may be relevant to the three clusters of outcomes.

Given such a conceptual focus, behavioral observation does have a role to play. Granted, it is unlikely that with such observations we will directly witness criminal or police activity, or nuisances, due to the relative rarity of these events. And, of course, we can't observe fear directly since that is a purely psychological outcome. Nonetheless, we can observe two things. First, we can observe residential behavior which falls within the realm of our predictor or mediating variables. (See Chapter 4). For example, we can observe residents' "networking"; their interactions with one another. Kohn et al. (1975) provided another such example when they assessed residents' territorial behaviors such as gardening, before and after physical modifications were made to the area. Second, we can observe the behavioral context, or behavioral background, out of which police activity, fear, and nuisances emerge.

Interpreting behavioral data as a setting condition for crime-related outcomes, however, involves an important assumption. We assume that the determinants of crime-related outcomes include both predisposing and precipitating factors. The predisposing factors include the setting, or environmental and behavioral conditions, which favor the occurrence of a crime-related outcome. These factors are the areal context, which may be fairly invariant over time. The precipitating factors include the presence of a potential offender and potential victim. The dichotomy we propose is not new. Analogous distinctions have been made in the mental health field (cf. Brenner, 1973). The distinction between predisposing and precipitating factors may become clearer through the following example. Consider an inner city block in the early evening. The street is not well lit, and the sidewalk is heavily trafficked. Most of the pedestrians are not people who live on the block, but are transients on their way to nearby stores and bus stops. There are few residents relaxing on their front steps, since sitting out is unpleasant given the volume of pedestrians. A resident coming home from work has her purse snatched from her as she stands on her front steps. In the twilight the offending youth makes off with her handbag, disappearing down an alley, and the victim's protestations are ignored by passers-by. In this hypothetical instance we can see several predisposing factors: the dim lighting, making identification of an offender difficult; the volume of off-block pedestrians, suggesting that it will be difficult for anyone to pick out a stranger who does not belong; and a dearth of residents to watch over activities on the street. The precipitating factors included the presence of an appropriate victim, and a potential offender. Thus, as the example demonstrates, such a distinction between pre-disposing and precipating factors may help to unravel the multiple determinants of crime-related incidents.

Perhaps more importantly, this bifurcation helps distinguish between the invariant, predisposing conditions, which may be fairly stable over time, and the fluctuating, precipitating conditions, which vary considerably over time. (We grant that some precipitating factors may be variable over time but regularly occurring. For example, in some areas mailboxes are more likely to be broken into, and people are more likely to be held up on the days when welfare checks come out.) And, it will be these fairly stable, predisposing conditions which will be reflected in behavioral profiles gathered through routinized, categorical observations.

D. Deciding What to Focus On

It is readily apparent that such behavioral profiles are complex, and that theoretical guidance is needed to further focus any analysis of these profiles. We can borrow two concepts from ecological psychology to help narrow our attention. The first useful concept is the behavior setting. The behavior setting is a bounded spatial area within which particular standing patterns of behavior regularly recur. Examples would include the Annual Rotary Garden Show, Sunday worship service at the Unitarian Church, the corner store during operating hours, and a music class in the junior high school at 10:00 AM on Fridays. The behavior setting includes a non-human component which supports the standing pattern of behavior, and stands in a synomorphic (i.e., surrounding and supporting) relation to it. The standing pattern of behavior includes the behaviors which are essential to the completion of setting goals, and the satisfaction of the participants in the setting. In a bar, for example, the standing pattern of behavior for a barmaid may include taking orders, mixing drinks, ringing up sales, making change, wiping tables, etc. Other behaviors such as chatting with the customers may be tolerated as long as they do not interfere with the smooth functioning of the setting. For example, during slow periods in the bar, conversing with customers would probably be an acceptable part of the standing pattern of behavior, but an unacceptable part when business is brisk. Thus, loosely speaking, standing patterns of behavior describe and delimit behavioral profiles in behavior settings. At its barest, the standing pattern of behavior describes what is essential to keep a setting alive; at its richest it describes what is acceptable or tolerable in a behavior setting.

The extrapolation of these concepts to blocks in the residential environment runs as follows. Blocks are like behavior setting in several respects. First, on the block as in a behavior setting people fill particular roles--resident, worker (e.g., mailman), and visitor or passer-by. Second, as in a behavior setting, some of the on-block roles may remain filled by the same persons over a period of time. Third, there is a range of acceptable behaviors for residents, (e.g., mowing the lawn, greeting neighbors, keeping noise down late at night), and, perhaps, for pedestrians as well. This range of acceptability tends to be wider in a block setting than in a behavior setting. Fourth, the definition and range or latitude in what is acceptable varies considerably from block to block, just as it varies from behavior setting to behavior setting (e.g., 11:00 Sunday worship service vs. Friday night basketball games at the "Y"). Lastly, in both block settings and behavior settings, the establishment and maintenance of standing patterns of behavior are influenced by social and environmental factors. In behavior settings, for example, a professor may have a hard time discussing research with graduate students when the professor is forced to share a cramped office with a talkative colleague. A restaurant manager may experience rapid personnel turnover, and therefore not be able to offer competent waitressing to his/her customers. Similarly, on a socially heterogeneous block residents may have very different ideas about how their residences should be maintained on the outside. Or, a block may be near a store, with concomitant heavy pedestrian traffic, and this may interfere with a smoothly functioning block ecology. Consequently, residents may be unable to stop pedestrians from loitering and littering, and, at the same time, may avoid sitting out because they find it unpleasant. Granted, there are differences between behavior settings and block settings. Nonetheless, there are also many similarities between the patterns of behavior in the two types of settings. (The apparent congruities may or may not be due to homology.) These similarities therefore support, at this time, the application of the concept of standing patterns of behavior to block settings. In George Kelly's (1955) terms, blocks may fall within the range of convenience of ecological psychology, although behavior settings are clearly the focii of convenience for this theory.

Consequently, certain features of blocks' behavioral profiles assume importance if we treat them as like standing patterns of behavior. Variability of profiles may impede the development of consensus on what behaviors are appropriate in exterior spaces, thus making it difficult to establish a standing pattern of behavior. Consequently, as variability increases outside behavior patterns may become more disorganized, weakening the residents' chances of exerting informal social control. Variability in levels of group size may be problematic. From this perspective the relative predominance of outsiders over people who are on-block residents would also be important. (Granted, it would only be possible to exactly determine who is an outsider and who is an insider by direct questioning.) But, categorizing people by activity may help approximate the insider/outsider split. Thus, in sum, employing the concept of standing patterns of behavior leads to a delineation of potentially important features of blocks' behavioral profiles.

In addition to concepts from ecological psychology, concepts and results from some recent crowding research are also helpful to us. Research by Baum and his colleagues (e.g., Baum, Harpin, and Valins, 1975; Baum and Valins, 1977) has suggested that high density is aversive because it results in excess, or unwanted social interaction. He also suggested that in an urban context residents may withdraw in order to avoid the excessive interaction concomitant with higher levels of density. Results were obtained which supported this notion. Baum, Davis, and Aiello (1978) found that residents on blocks with many pedestrians were less likely to use their front yards, or to socialize with neighbors there. (Appleyard (1976) has observed similar effects due to vehicle traffic.) Density caused residents to retreat, thereby lessening their control over the immediate environment. This leads us to expect, in the present study, that blocks where crime and problems are higher may be those blocks where density and volume of persons on the sidewalks may be higher.

D. Summary of Issues

In brief then, we decided to examine the following issues:

1. The volume or density, and variability of standing patterns of behavior in high- and low-crime blocks.

2. To examine the location of people on the block (i.e. porch or steps vs. sidewalk), and the relationship of location to crime-related outcomes.

3. To examine age/sex breakdowns (e.g., men vs. women, kids vs. others), and explore the relationship of these breakdowns to crime-related outcomes.

4. To distinguish as best as possible between insiders and outsiders, and explore the relationship of this breakdown to crime-related outcomes, and block characteristics.

5. To explore changes in level and composition of behavioral profiles across seasons.

For issues 1-4 we step into relationships of profiles to crime-related outcomes in the following fashion. First, we explore differences between high and low police activity blocks, using a dummy code for police activity. Subsequently, specific block means on crime-related outcomes such as fear, and on verified determinants of these outcomes, are correlated with aspects of behavioral profiles. Thus, with a focus on the block as the unit of analysis, we examine links between behavioral profiles, outcome, and block characteristics, with progressively greater levels of magnification.

Method

E. Block Selection: Rationale and Procedure

We selected a subsample of blocks as sites for behavioral observation in the spring of 1979. Given the theoretical issues discussed above, it is obvious that we expected behavioral profiles to be related both to block characteristics, and to crime-related outcomes. We felt it was most important to insure variation on the latter. To insure outcome variation, we decided to select a pool of high police activity blocks and a pool of low police activity blocks. Hereafter, for the sake of simplicity, we refer to these as high- and low-crime blocks. This selection rationale not only guaranteed us variation on a pivotal outcome, but it is also allowed us to aggregate our results over two types of blocks. Consequently, there is the greater possiblity that our results will be generalizable beyond the specific pool of blocks examined. Of course, the actual generalizability of the results we observe will depend upon future research outcomes. Thus, with our present strategy we examine types of blocks, instead of just a series of case studies, and, in addition, we ensure variation in important outcomes.

Using police calls for service data, the level of police activity for each study block was determined. Specifically, the total number of calls for police service, per address, was determined for each block. Using this data, the seven blocks with the highest levels of police activity, and the seven blocks with the lowest levels of police activity, were placed in the initial pool of possible sites. Within each group of seven, further eliminations were achieved by deleting blocks which had idiosyncratic physical features (e.g., block extremely long, dead-end alleys), or which were near idiosyncratic off-site features (e.g., public housing projects, schools, etc.) This left us with three low crime block sites, and four high crime block sites. The blocks are described in the next section.

F. Description of Block Sites

The three low crime blocks were Blocks 05, Block 13, and Block 29. The four high crime blocks were Blocks 61, 65, 82, and 83. Throughout we refer to these blocks by number in order to preserve the anonymity of residents.

Block 05 is a "T" layout, with two-story houses on both sides of the street. Houses have covered front porches and steps leading down to the sidewalk. On each side of the street the houses are connected in a continuous group. Behind the houses on each side, an alley runs the full length of the block. Access to the alley is off the side street.

Block 13 is a through street, with stop signs at both ends. Houses have covered front porches and steps leading down to the sidewalk. On each side of the street, the middle 75% of the block is composed of a continuous group of row houses. On both ends of each side of the street, houses facing adjoining streets protrude. Access to each alley is directly off the street itself.

Block 29 is a court or cul-de-sac arrangement. Two-story row houses are spread around the court in separated groupings. Each house has a small, uncovered porch, steps, and yard between it and the street. A continous "U" shaped alley runs behind the houses. Access to the alley is from the adjoining street.

Blocks 61 and 65 are narrow, inside-block, through streets, right next to each other. Physically, the blocks are exactly alike. Both are lined with continuous two story row houses, with steps in front leading directly down to the street. On each side, behind the houses, alleys run parallel to the street for the length of the block. The only physical difference between the blocks was that a small playground was nestled in the corner of Block 65.

Blocks 82 and 83 were also right next to each other. On each block, which was a through street, a continuous grouping of two story row houses was on each side of the street. Houses had a covered porch, steps, and small yards between themselves and the street. Behind each street, on each side, alleys ran for almost the entire length of the block.

G. Observation Procedures

In this section we briefly describe our procedures. Coding categories for activities and age/sex groups were developed. A pair of raters was trained. Observations were carried out during a continuous four-week period of Summer, 1979. During each week of observation, each block was observed for two weekdays, and one weekend day. During each day of observation, each block was observed three times: once in the morning, once in the mid-afternoon, and once in the early evening. On each observation circuit the raters followed a predetermined route. On each route they recorded the location, activity, and age/sex characteristics of each person as they passed him/her. The raters recorded events independently.

The purpose of these extensive summer observations was to lay down a baseline or basic pattern. The pattern at different times of year could then be compared to this pattern. Observations were also carried out during the fall, winter, and spring. Observation periods at these other times of year varied from one week to three weeks. The pattern observed during the summer, however, offers the most reliable description. The summer pattern is the most definite because each element in the profile was determined through a large number of observations. Thus, in our analysis we focus attention largely on the summer profile.

Results

Comparing High- and Low-Crime Blocks

H. Issues of Density and Group Size

The following ratios were developed from the observational data. On each block, people per household was used as the main density measure. As the number of people per household noted on each observation circuit increases, the number of persons appearing from each household in the exterior spaces, is increasing. Each household is "producing" more people outside. (Note that this variable standardizes or controls for the density of the block itself.) To measure group size, people per event was the measure used. Every time the observer noted someone behaving in a space, that was recorded as an event. As the number of people per event increases, the number of people, at a location, engaging in particular activities, increases. For example, if an observer walked down a block and saw three men talking at one address, four women sitting at another address, and five men standing at another address, average group size (average number of persons/event) would be four. Due to the highly variable nature of the group size and density measures, these data were normalized using a log transform. Low- vs. high-crime blocks were coded using a 0/1 dummy variable. Finally, bearing in mind the very low power of this analysis with only seven blocks, we report results significant at or below $p < .10$.

The density of people using outdoor space in the high- and low-crime blocks was quite different, particularly during the weekdays. At every time of day on weekdays, the average number of people/household was higher on the high-crime blocks (all $\underline{r}$s > .80, all $\underline{p}$s < .05). On weekends, density in high-crime blocks was considerably higher in the morning and evening (respectively, rs = .77 and .85, $\underline{p}$s < .05), and somewhat higher in the afternoon ($r = .67$, $p < .10$). Thus, ignoring the particular location of behavior on the block, the high-crime blocks exhibit a heavier or more dense use pattern than the low-crime blocks.

When particular locations of interest are taken into account, such as porch and sidewalk, the relationship appears to hold with somewhat more force for the porch area. During the weekday, density of use on the porches is higher on the high-crime blocks than on the low-crime blocks, at all times of day (all $\underline{r}$s > .80, all $\underline{p}$s < .05). On sidewalks, density is greater on the high-crime blocks in the afternoon and evening ($\underline{r}$s > .80, $\underline{p}$s < .05), but not in the mornings. On weekends, the density differences between high- vs. low-crime blocks remain, albeit they are weaker. Again, the differences are stronger in the porch arena than in the sidewalk arena. On weekends, at two times of day, morning and evening, density of use on high crime block porches is higher than on low crime block porches (respectively, $\underline{r}$s = .76, .89, $\underline{p}$s < .05). On weekends, there is no significant difference between density of use on high and low crime block sidewalks at any time of day (all $\underline{p}$s >.05). Thus, the arena-specific differences in density of use, between high- and low-crime blocks, appear to be weaker on the weekend than during the week. Furthermore, the focus of the density differences is the porch arena, suggesting that the difference between these two types of blocks is largely due to different <u>resident</u> behaviors, rather than pedestrian behavior.

Although not as marked as the density differences, the two types of blocks do differ in level and variability of group sizes. Weekday morning observations indicated that group size was slightly higher in the high-crime blocks ($r = .68$, $p < .10$), and that group sizes were more variable ($r = .78$, $p < .05$) in those blocks. When location (i.e., sidewalk vs. porch) is taken into account, however, interesting differences appear in the afternoon. On the high crime, as compared to the low-crime blocks, group sizes on sidewalks were higher ($r = .82$, $p < .05$), and more variable ($r = .78$, $p < .05$) in the afternoon. No differences between high- and low-crime blocks were noted on weekends.

Furthermore, the presence of these groups is worrisome to residents. Size and variability of these groups that gather on sidewalks in the afternoon correlate with block fear levels ($r = .77$, $p < .05$ for mean group size; $r = .74$, $p < .10$ for size variation). Thus, interestingly enough, these group size results suggest that in high-crime blocks larger and thus more threatening groups may tend to accumulate on the sidewalks, and that the variability of this gathering process also causes concern.

I. Differences in Age/Sex Composition

An examination of age/sex composition differences between the high- and low-crime blocks helps to further illuminate the density differences described above. On weekday mornings, density of men but not of women or children, is higher on the high-crime blocks than on the low-crime blocks ($r = .86$, $p < .05$). During the afternoon and evening observation times, differences in density are apparent in several age/sex categories.

The age/sex breakdown is also of some help in illuminating the group size differences, discussed above in the preceding section between high- and low-crime blocks. On weekday mornings, on the high-crime blocks there is a tendency for slightly larger, and significantly more variable groups of men to gather (respectively, $r = .68$, $p < .10$; $r = .82$, $p < .05$). On weekday afternoons, on the high-crime blocks, the groups of children and boys that gather, tend to be somewhat more variable (respectively, $r = .70$, $p < .10$; $r = .69$, $p < .10$) than on the low-crime blocks.

Thus, the age/sex analysis reveals differences between high- and low-crime blocks. On weekday mornings, the differences center around density and group size in the men category, and later in the day the differences are spread across several age/sex categories.

J. Insiders and Outsiders

From our analysis we sought to develop approximate measures of insiders and outsiders on each block. Roughly, we wished to include as insiders people who lived on a particular block , or were at least acquainted with the residents on that block. We wished to include as outsiders people who were passing through a block, and/or not interacting with the people residing on that block. Obviously, there are limitations in making inferences about roles from behavioral data based on fairly simple categories. The only way to be sure if a person is an insider or a stranger is to ask him/her. Nonetheless, given the volume of people in the outdoor environment, and the intrusiveness of such a procedure, this was not possible. Thus, we sought a proxy for roles through behaviors.

We relied on behavior categories to define each of these roles. If a person was sitting and talking, or standing and talking, he/she was counted as an insider. Granted, this is a very restrictive definition of an insider, but therein lies its safety. If a person was stationary, i.e., sitting or standing, it's very likely that he/she would be an insider. Sometimes, however, people loiter on steps or sidewalks, even though they don't belong. Thus, we required, in addition, that the person be talking, thereby guaranteeing a linkage between him/her and other stationary persons. If a person was walking or working, he/she was classified as an outsider. Unfortunately, this class may not be quite restrictive enough, since it may include residents on the block who are simply going from one place to another. On the other hand, it does reflect the opposite of the insider definition. Whereas the insider is rooted, the outsider is transient, or in motion. Thus, for each block, the % of total people who were acting like outsiders, and the % of total people who were acting like insiders, at each time of day, was determined. We focus on the more stable weekday profile. Finally, one point about these categories deserves mention. It is irrelevant whether one particular category is over-restrictive or under-restrictive, since we are concerned here with correlation. Thus, the "level" of one particular category is not important. What is important is that that particular category be applied evenly across all the blocks.

The percent of persons on blocks who represent outsiders, was modestly variable across times of day, (r_{av} = .63). The percent of insiders was more variable across times of day, (r_{av} = .32). Thus, it appears that the amount of people imported to or traversing the blocks is fairly steady across times of day, while the residents' behavior, and thus percent insiders, is more variable across the daily cycle.

Furthermore, the relationship between insiders and outsiders is important because one may inconvenience the other. As Baum et al. (1978) have suggested, the presence of transients may make residents uneasy about being out. The present data provides some support for this inconvenience hypothesis. On low-crime blocks there was an inverse relationship, on weekday mornings, between percent insiders and percent outsiders ($r = -.996$, $p < .06$).

There were no differences between our high- and low-crime blocks in the percent outsiders on the block at any time of day, or the percent insiders on the block at any time of day. The percent outsiders on a block varied from 1% to 30%, and the percent insiders varied from 5% to 25%. The insider and outsider profiles did, however, present some interesting associations with block characteristics, and these are discussed in the next section.

Profiles and Block Characteristics

Components of the behavioral profiles presently under examination may or may not mirror block characteristics. We explore this issue in the present section. Block characteristics are measured using block means from survey data. In order to best utilize this available information, we focus on the insider and outsider components of the behavioral profiles. Our theoretical perspective clearly suggests the following links between our survey data and insider and outsider components of the behavioral profiles: (1) as local ties become more widespread, or stronger, the percent of insiders should increase; and (2) as territoriality weakens, the percent of outsiders should increase.

Furthermore, the present data offer very severe tests of these hypotheses, in that data from two very different sources are correlated with each other (i.e., survey with observation), and thus there can be no shared variance due to method similarity.

K. Insiders

The correlations reveal an interesting and complex relationship between the presence of insiders and local social climate. First, contrary to our expectations, the percent of insiders present on a block was positively correlated with unwillingness to trust neighbors for property watching ($r = .83$, $p < .05$). This correlation, however, was basically due to the high-crime blocks, where prevalence of insiders and unwillingness to trust neighbors were very strongly correlated ($r = .985$, $p < .05$). Nonetheless, the expected relationship between insiders and unwillingness to trust neighbors did appear on the low-crime blocks, based on the evening profile ($r = -.998$, $p < .05$).

These disparate results suggest two different processes operating in our two types of blocks. In the low-crime blocks it appears, as expected, that as people are outside more and talking more they are developing bonds of neighborly cooperation, and some minimal level of trust. On the high-crime blocks, however, people outside talking arouses distrust and suspicion. Further evidence relevant to this latter linkage comes from a recent study by Taylor, Brower, and Stough (1976). In a picture task given to inner city residents, living on blocks like the present high crime blocks, they found that the presence of people standing outside was associated with higher levels of "signifying." Signifying meant telling tales about others, prying into others' business, and spreading rumors. Thus, apparently in low-crime blocks the prominence of insiders in out-of-door spaces fosters and undergirds neighborly helping, while in high-crime blocks the same presence subverts neighborly cooperation.

L. Outsiders

According to our theoretical perspective, the prominence of outsiders should covary positively with problem-related outcomes. The idea here is that the presence of the outsiders in part causes problems, or weakens residents' ability to control problems. The data provided support for this hypothesis. For example, on high-crime blocks prevalence of outsiders in the morning correlated positively with total problems ($r = .90$, $p < .10$). Also, for example, on low-crime blocks the prominence of outsiders was associated with more serious problems ($r = .99$, $p < .10$). Thus, in high- and low-crime blocks the prominence of outsiders is associated with a perception of increased problems in the neighborhood.

Unfortunately, prevalence of outsiders was linked in a more complex fashion to fear levels. On weekday afternoons, considering all seven blocks there is a modest negative association between fear and prominence of outsiders ($r = -.73$, $p < .10$). The pattern is quite different, however, for the high- and low-crime blocks. At all times of day there is a sizable positive correlation between prominence of outsiders and fear on low-crime blocks. At all times of day there is a negative correlation between outsiders and fear on high-crime blocks, and this correlation is significant based on afternoon observations ($r = -.98$, $p < .05$). Thus, on the high-crime blocks it seems that ousiders are a familiar and expected feature of the local ecology, whereas on low-crime blocks outsiders are less familiar, and more worrisome.

Furthermore, this interpretation of the varying perception of outsiders on high- and low-blocks is further supported by the territorial variables. We hypothesized that the prevalence of outsiders will influence territorial attitudes toward near-home spaces; specifically, that it will be associated with a higher level of problems related to a lack of control, increased difficulty in distinguishing insiders from outsiders, and a lower level of responsibility in those territories. And, we expect these relations to hold most strongly for low-crime blocks, because it is there that outsiders appear to be most threatening. By and large, the data confirmed these expectations. On the low-crime blocks the prominence of outsiders was positively associated with problems (e.g., for morning data, $r = .99$, $p < .10$), and negatively associated with responsibility (e.g., for evening data, $r = -.995$, $p < .10$). None of these correlations even approached significance on the high-crime blocks. On both the high- and low-crime blocks, however, presence of outsiders was associated with perceiving less of the block as home, but, in line with expectations, this relationship was stronger on the low than on the high-crime blocks (for evening data, $r = -.99998$, $p < .05$ for low crime; $r = -.91$, $p < .10$, for high-crime blocks.)

Thus, the role played by outsiders in the low-crime blocks fits with our expectations. The prevalence of people passing through is associated with higher fear, higher problems, and a dampening of territorial attitudes toward near-home spaces and the block as a whole. On the high-crime blocks these relationships do not hold with the same force. The link between outsiders and fear is particularly chameleon-like, switching sign between low- and high-crime blocks. In sum, the role of outsiders is fairly clear in low-crime blocks, but not so clear in the high-crime blocks.

Issues of Variation

The observation schedule used in the present study contains several sources of natural variation: time of day, weekday vs. weekend, and seasonal variation. In the present section we assess the influence of these variations. Our purposes here are purely open-ended and descriptive, seeking not to chart any particular course, but, rather, to merely note the terrain as far as we can see.

M. Time of Day

On a typical day, some blocks accreted more people as the day progressed, while, at the same time, other blocks lost people over the course of the day. Figures 1 and 2, for example, show the accumulation of people on the porches and sidewalks, at different times of day. Examining Figure 1, we see that people on porches of Blocks 5, 61, and 65, increase steadily as the day wears on. Blocks 13 and 29 show a slight loss over the day. On sidewalks, Figure 2 indicates a steady loss of people, over the day, for Block 5. Other blocks show non-monotonic patterns. Also, on some blocks (83, 82), the volume of people on the sidewalk mirrors the volume on the porch, while, for other blocks, (e.g., 5), the two functions are inversely related. Thus, variation in the blocks' behavioral profiles across time of day is considerable, and not clearly patterned.

N. Weekend vs. Weekday

On the weekends, everything is upscale, and even more variable across time of day, compared to the weekdays. Figure 3 is illustrative on this point. On all blocks the volume of people on sidewalks is higher, as compared to weekdays, and the variation in volume, across time of day, is larger. It seems likely then that it is much more difficult for blocks to maintain a standing pattern of behavior on weekends than on weekdays.

Also, on weekends the prevalence of insiders on blocks is greater than during the weekday. No net increase of percent outsiders is apparent on weekends.

O. Seasonal Variation

In the fall, as compared to the summer, there are fewer people out. (See Figures 4 and 5, for example). Those people that are out are more likely to be working or walking. During the winter the behavioral profiles are depressed even further, and by spring they have returned, but are not yet close to summer levels. In the fall and winter very few insiders are apparent in the profile. It is simply not comfortable, for most people, to be sitting out or chatting.

Behavioral Description of Each Block

In this section a more detailed, closely etched description of the behavioral profiles of each block are laid out. These narratives serve to further clarify, and delimit some of the more general patterns described above.

P. Block 5

On an all-time average, 87% of the people observed were in the front spaces (porches, sidewalks, street) and 67% were in home spaces (porches and back yards). Over time of day, people were distributed as follows: 29% in the morning, 33% in the early afternoon and 38% in the late afternoon. This masks the fact that the increase over successive time periods is attributable almost entirely to the use of the porch: the porch is the most intensively used space (57% of the people were here) and intensity of use increases progressively through the day. The morning count is more than doubled in the late afternoon. In contrast, the number of people in the sidewalks and in the back yards is at its highest in the morning and then decreases progressively through the day.

1. Sitting and talking. This behavior happens as much in the front as in the back (F-51%, B-49%). The back was used mostly in the morning and early afternoon, and the front in the late afternoon.

2. Standing and talking. This occurs mostly in the front (F-77%, B-23%) and the numbers increased during late afternoon.

3. Walking or working. This occurred at a more-or-less constant rate through the day, and mostly on the front (F-79%, B-21%). The percentage of people who were walking or working was unusually high, but it decreased through the day while the percentage of people in the other two categories (sit and talk, stand and talk) increased.

FIGURE 1

Porch, Summer Weekday

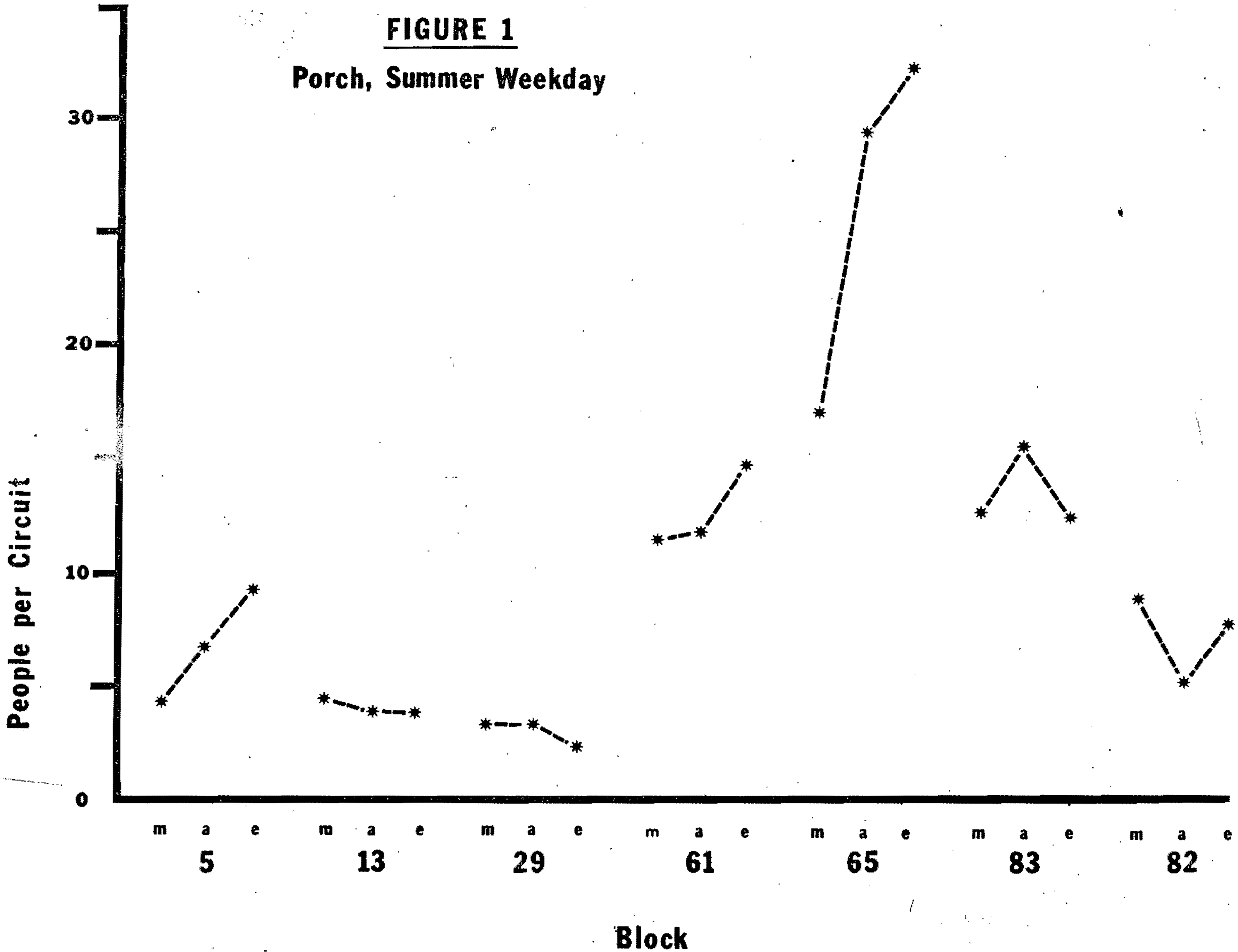


FIGURE 2

Sidewalk, Summer Weekday

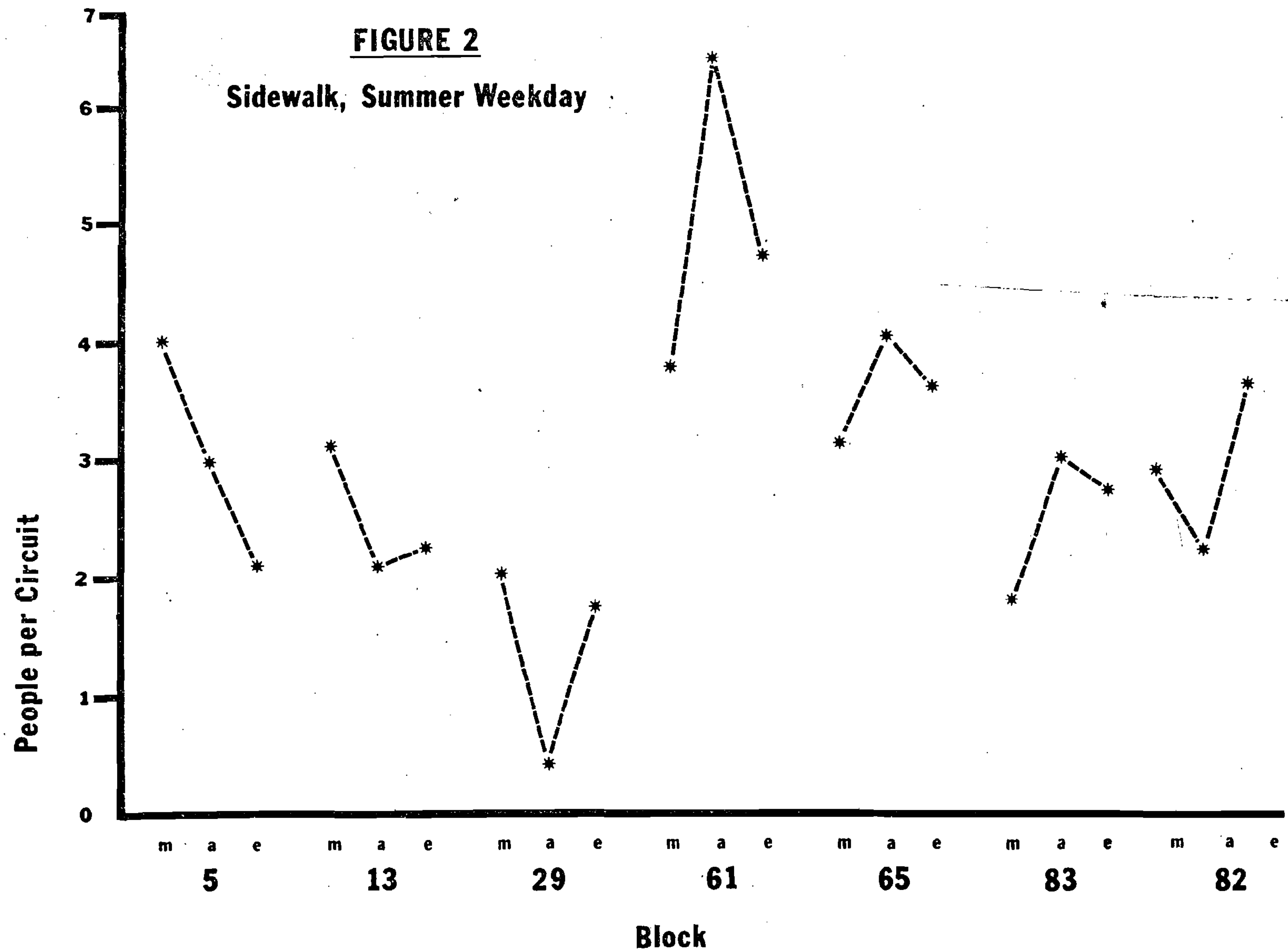
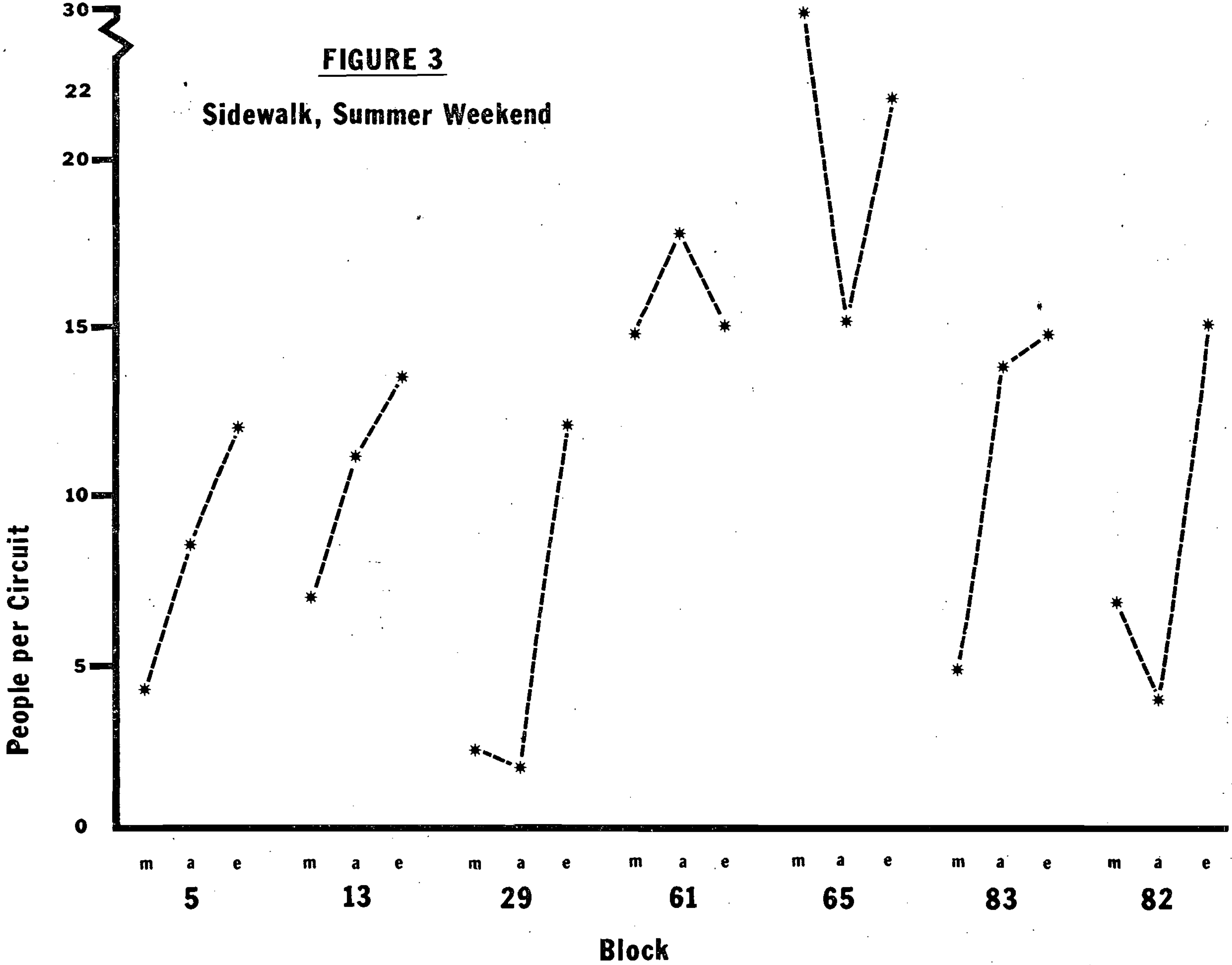


FIGURE 3

Sidewalk, Summer Weekend



212

FIGURE 4

Sidewalk, Autumn Weekday

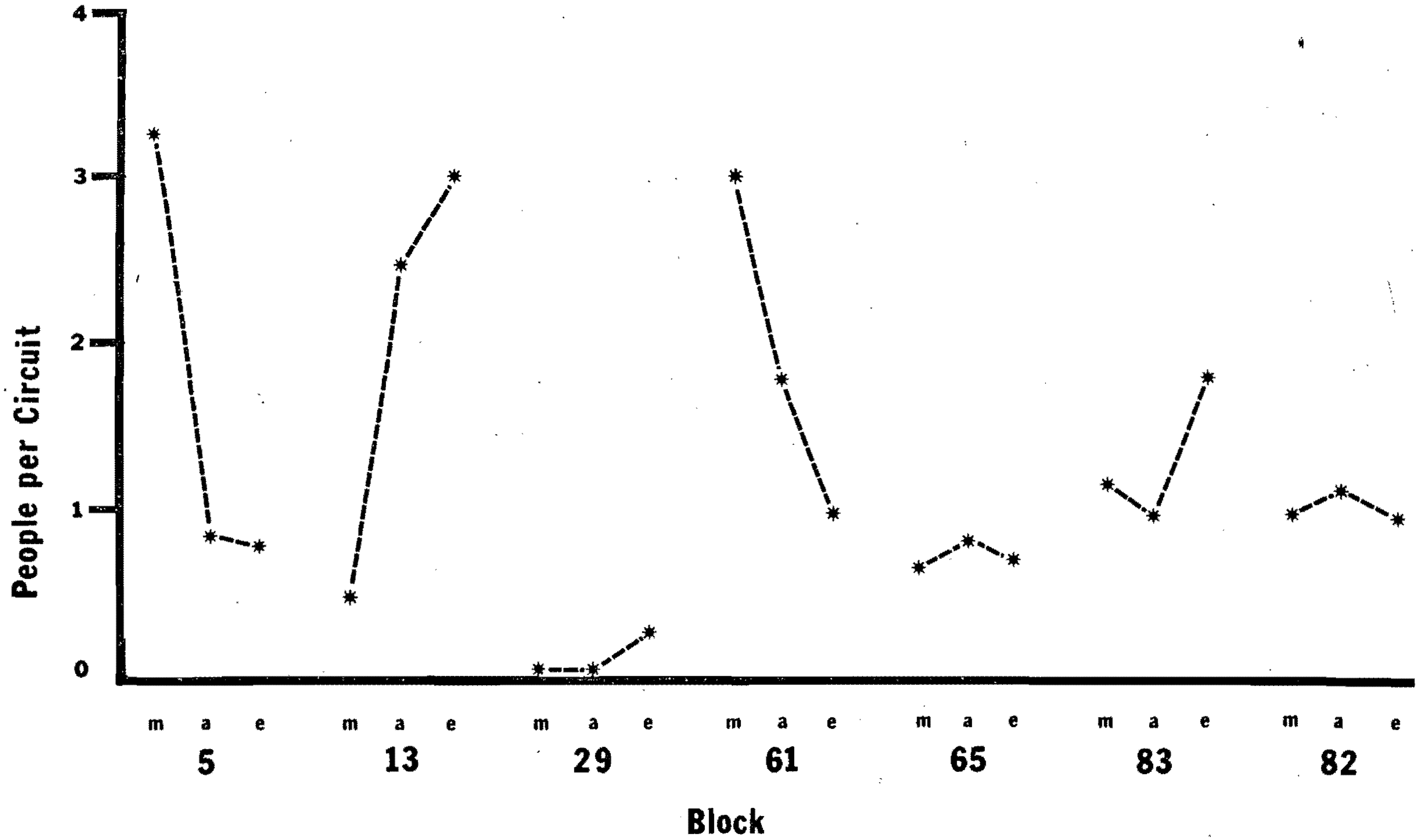
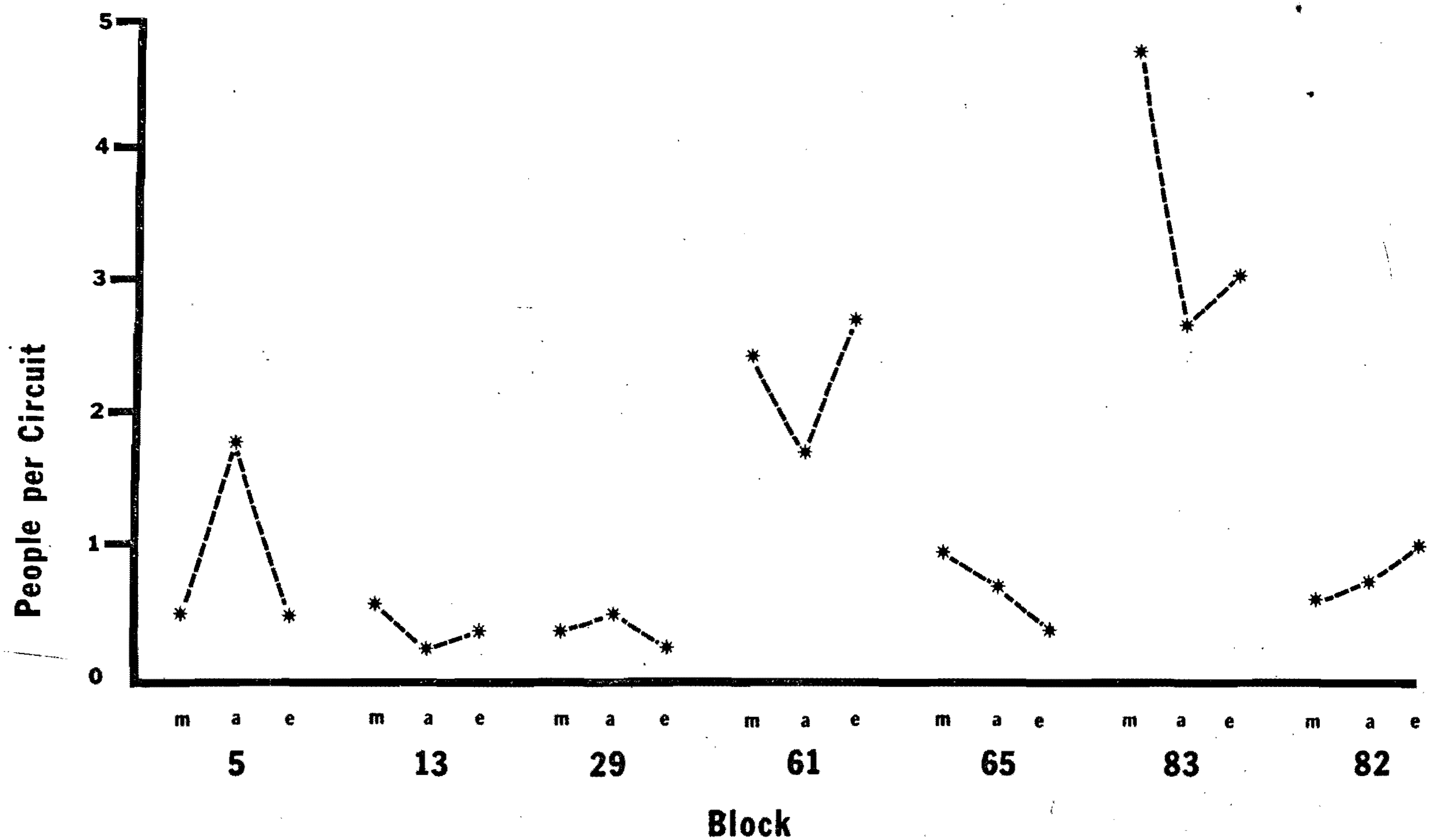


FIGURE 5

Porch, Autumn Weekday



4. Group size. Groups walking, and talking were larger in front, groups doing housework were larger at the back, groups sitting were about the same size back and front.

Q. Block 13

On an all-time average, 74% of the people observed were in the front spaces (porches, sidewalks, and street); 55% were in the home spaces (porches and back yards). The general distribution of people across the day was 41% in the morning, 26% in the early afternoon, and 33% in the late afternoon. This pattern, a substantial reduction in number in the early afternoon and a partial recovery in the late afternoon, is typical of just about all spaces. The porches were most heavily used of all spaces at all times (40% of all people observed), then came the sidewalks (25%) and then the back yards (14%). The alleys were unusually well used during the mornings when there were more than three people in the alleys for every two in the yards.

1. Sitting and talking. This occurred mostly in the front (F-59%, B-41%) and mostly during the morning and early afternoon.

2. Standing and talking. This occurred mostly in the front (F-90%, B-10%) and maintained a more-or-less constant level throughout the day.

3. Walking or working. This occurred mostly in the front (F-83%, B-17%) with a reduction in numbers in the late afternoon.

4. Group size. Groups walking, talking, and sitting were substantially larger in front, and sitting groups were unusually large. Groups standing, doing housework, and playing on equipment were larger at the back.

R. Block 29

On an all-time average, 57% of the people observed were in the front spaces (porches, front yards, sidewalks, and streets), 67% were in home spaces (porches, and front and back yards). Over the day, the general distribution was 30% in the morning, 32% in the early afternoon, and 38% in the late afternoon. This even distribution masks a shift that takes place during the day from front to back spaces: 74% of the people in the morning were on the front, but only 54% in the early afternoon and 48% in the late afternoon. In the morning, there were three people on the front porch for every two in the back yard, but in the late afternoon there were five people in the back yard for every one on the porch.

1. Sitting and talking. This happened almost as much in the front as in the back (F-45%, B-55%). This activity was heaviest in the front in the morning and in the back in the early afternoon.

2. Standing and talking. This occurred mostly in the back (F-23%, B-77%) and was most heavily concentrated in the late afternoon.

3. Walking or working. This was heavier in the front than in the back (F-58%, B-42%). It was most prevalent in the front in the morning and the late afternoon, and in the back in the early afternoon.

4. Group size. Groups walking were larger in the front: groups sitting, talking and doing housework were larger in the back.

S. Block 61

An unusually high number of people were observed. On an all-time average, 90% of the people were in the front spaces (steps, porches, sidewalks, and street). Across all times 63% of the people observed were in home spaces (steps, porches, and back yards). The general distribution was 32% in the morning, 34% in the early afternoon and 34% in the late afternoon. This even distribution masks a shift in the nature of activities during the day. The front steps and porches were at all times by far the most intensively used spaces (accounting for 57% of all people observed) but use of the two areas peaked in the late afternoon, while use in other spaces peaked in the early afternoon.

1. Sitting and talking. This occurred mostly on the front (F-88%, B-12%) at a more-or-less constant level over the day.

2. Standing and talking. This occurred mostly on the front (F-85%, B-14%), with a modest peak in the morning and a higher peak in the late afternoon.

3. Walking and working. This occurred mostly on the front (F-82%, B-18%) and increased steadily throughout the day.

4. Group size. Groups sitting and talking were larger in the front; groups doing housework were larger in the back.

T. Block 65

An unusually high number of people were observed. On an all-time average, 92% of the people were in the front spaces (steps, porches, sidewalk, and street). Across all times, 80% of the people were in the home spaces (steps, porches, and back yards). The general distribution across time of day for all spaces was 24% in the morning, 37% in the early afternoon and 39% in the late afternoon. These figures mask a number of differences in the use of individual spaces. The front steps and porches accounted for 75% of the people observed; intensity of porch use increased throughout the day with 22% of users seen in the morning, 37% in the early afternoon and 41% in the late afternoon. Use of the sidewalks, yards, and alleys peaked in the early afternoon (respectively, 31%, 39%, 30%), and use of the street space peaked in the morning and late afternoon (respectively, for each time of day 33%, 26%, 41%).

1. Sitting and talking. This occurred mostly on the front (F-80%, B-20%) with 51% of these activities occurring here in the late afternoon.

2. Standing and talking. This occurred mostly on the front (F-85%, B-14%) with 50% of incidents occurring here in the late afternoon.

3. Walking or working. This occurred mostly on the front (F-83%, B-17%) with peaks of activity in the morning and late afternoon.

4. Group size. Groups sitting and talking were larger in the front. Groups doing housework, and standing, were larger in the back.

U. Block 83

An unusually high number of people were observed. On an all-time average, 71% of the people were in the front spaces (porches, sidewalks, and street), and 76% were in home spaces (porches and back yards). The general distribution of all people over the day was 30% in the morning, 36% in the early afternoon and 34% in the late afternoon. These figures which indicate a peaking in the early afternoon reflect the use of the front spaces (porches and sidewalks). The back spaces (yards and alleys), however, do not have peak use in the early afternoon, but rather in the late afternoon.

1. Sitting and talking. This occurred mostly on the front (F-84%, B-16%), with 50% of this activity occurring in the late afternoon.

2. Standing and talking. This occurred mostly on the the front (F-80%, B-20%) with relatively light activity in the morning, and a higher, constant level of activity through the afternoon.

3. Walking or working. This occurred mostly on the front (F-76%, B-24%) with a peak in the early afternoon.

4. Group size. Groups walking and standing were larger in the front; groups doing housework were larger in the back. Groups sitting and talking were about equal in size in front and back spaces.

V. Block 82

On an all-time average, 73% of the people observed were in the front spaces (porches, sidewalks, and street). Across all times, 58% of the people were in home spaces (porches and back yards). The general distribution of people across all spaces was 37% in the morning, 23% in the early afternoon and 40% in the late afternoon. This pattern, a substantial reduction in numbers in the early afternoon and recovery in the late afternoon, is typical of all spaces. The porches were most used at all times (50% of all people observed), then came the sidewalks (20%), the alleys (19%) and then the back yards (9%).

1. Sitting and talking. This occurred mostly in the front (F-81%, B-19%). While this activity followed the typical inverted "V" pattern across times of day, it was most intense during the morning.

2. Standing and talking. This occurred mostly on the front (F-58%, B-42%). It was most intense during the late afternoon.

3. Walking or working. This occurred mostly on the front (F-68%, B-32%). This activity dropped in the early afternoon and was most intense in the late afternoon (34%, 23%, 43%).

4. Group size. Groups talking, sitting, and playing ball were largest in the front; groups doing housework were larger in the back.

W. Comment

It is apparent that, as we move to a greater level of magnification, further complexities in each block's behavioral profile emerge. For example, many blocks show a fairly constant split between front and back across different times of day, while other blocks (e.g., Block 29) show an increasing proportion of users appearing in back as the day progresses. In general though, it seems likely that the finer details of these use patterns are a complex function of physical, demographic, and social features of the blocks.

X. Use Peaks in High- and Low-Crime Blocks

One feature of our observation sites that was particularly interesting had to do with the changes in use at different times of the day. Essentially, four patterns over the course of the day (morning, afternoon, and evening) are evident. One pattern is a morning peak, where most people were observed during the morning, and thereafter use decreases monotonically throughout the day. A second pattern is an evening peak where level of use increases monotonically throughout the day, with most intense use appearing in the early evening. A third pattern is a morning-evening peak, or a "V"-shaped function. Here use is high in the morning and evening, with a lull in the early afternoon. The fourth possible pattern is an early afternoon peak, or, an inverted "V"-shaped function. Here use is low in the morning, increases in early afternoon, and then drops off again toward evening.

In order to assess the possibility that blocks with varying crime rates exhibited different use patterns across times of day, we examined the use pattern, in each major space, for each block. The results appear in Table 1. These data yield some very interesting associations. The early afternoon peak is most characteristic of different spaces on high crime blocks. Early afternoon peaks on sidewalk spaces appear to be particularly symptomatic of high-crime blocks. By contrast, the morning peak use function is most characteristic of low-crime blocks. Thus, these two use patterns, for the present sample, discriminate well between high- and low-crime blocks.

Of course, we can only speculate why the low-crime blocks show peak use in the morning while high-crime blocks show peak use in the early afternoon. Our survey data are of no help in decoding these differences. The difference could be caused by socioeconomic differences. For example in lower-income, higher-crime areas people are out in the early afternoon because that is the best way to escape indoor heat at that time of day, while on the lower-crime, high-income blocks people retreat inside to air-conditioned luxury to escape the heat. If use patterns and crime are both associated due to their link to socioeconomics, then we have here a case of spurious correlation. The nature of the correlation is, of course, an empirical question.

Some Comments on Method: A Digression

Data processing and analysis of this behavioral observation data was extremely cumbersome, time consuming, and expensive. We made several decisions that turned out to be rather costly, and we pass these on so that others may learn.

able 1 Use Patterns in High and Low Crime Blocks

tern	Space				
	Porches/Steps	Sidewalks	Back Yards	Alleys	Streets
ning Peak	Block 13 (L) Block 29 (L)	Block 5 (L) Block 13 (L)	Block 5 (L)	Block 29 (L)	
ning Peak	Block 5 (L) Block 61 (H) Block 65 (H)	Block 82 (H)	Block 29 (L) Block 61 (H) Block 83 (H)	Block 5 (L)	Block 5 (L) Block 13 (L) Block 29 (L) Block 83 (H) Block 82 (H)
ning-Evening eak	Block 82 (H)	Block 29 (L)	Block 13 (1) Block 82 (H)	Block 13 (L) Block 61 (H) Block 82 (H) Block 83 (H)	Block 65 (H)
ly-Afternoon eak	Block 83 (H)	Block 61 (H) Block 65 (H) Block 83 (H)	Block 65 (H)	Block 65 (H)	Block 61 (H)

e. (L) = low crime block; (H) = high crime block

First, in the data processing we sought as much as possible to preserve information inherent in the data. Thus, full information about address on the block, and arena, was preserved in the data file for all events recorded. The retaining of this spatial information, however, required substantial additional card preparation, resulting in a larger file that was more expensive to read in each time. Any researcher embarking on a similar research task would do well to evaluate the specific costs and benefits of retaining information by location.

Second, many of our analyses used ratio variables, e.g., people per event. Ratio variables require care when they are correlated with other ratios: variables with similar denominators may show spuriously high correlation (Cohen and Cohen, 1975). Although this feature of ratios was not troubling in our study, we confronted a different problem. We sought to assess variation, and thus the standard deviations of sets of ratios. Unfortunately, for some ratios these standard deviations can be very small.

Third, instead of developing an "omnibus" programming package for the data, that would be flexible enough to deal with a variety of questions, we developed specific programs for specific questions. Thus, each program had to be written, and debugged, separately. This was expensive and time consuming. There is a very real and serious need for adequate software to efficiently deal with observation data. Programs are needed that are flexible, and allow the researcher to move quickly and efficiently into very fine-grained issues (e.g., activity breakdowns for women on porches). This type of data does have a lot of detail to yield. Without adequate and flexible software, however, it is difficult to efficiently tap into this level of detail.

These above limitations forced us to be very specific in our treatment of the behavioral data. Fortunately, our theoretical model, and notions from ecological psychology were available to help us chart our swath through the details. And, there's no doubt that the data were very useful and informative. It is hoped that further advances in processing of this data can make them even more useful to researchers.

Discussion

Two general points, in line with our expectations, emerge from the present analysis. First, on high - as compared to low-crime blocks, density of people in outdoor spaces is higher, and this appears to be due to each household producing more residents out of doors. Of course, both outdoor density and crime may owe their co-occurrence to joint association with socio-economics. But, it is also likely that, net of socioeconomics, density is a source of irritation, and indirectly associated with crime. For example, with higher density it may be more difficult to recognize people, resulting in anonymity, and perhaps emboldening would-be offenders. Second, it is apparent that the size of groups gathering in public spaces like sidewalks, as well as the variability of these gatherings, is worrisome to residents. Such a relationship supports our expectation that in some respects blocks are like behavior settings. It is more difficult to maintain a standing pattern of behavior in the face of unpredictable or sizable gatherings. Thus, an ecological, psychological perspective does appear to be useful in understanding the correlates of fear and problems in the residential environment.

Above and beyond these two general, expected trends, however, the present analysis revealed some conditional findings which clearly underscore the need for further theoretical refinements. As one would expect given theories of informal social control and human territoriality, the presence of insiders was associated with more trust between neighbors; and the presence of outsiders was associated with more problems, and more fear, more territorial problems, and less territorial responsibility. But, all of these relations held only for low crime blocks. By contrast, the results suggested that, on high crime blocks, the presence of insiders was viewed negatively and the presence of outsiders was viewed positively. Clearly then, in high problem areas attitudes toward insiders and strangers are very different than they are in more trouble-free areas. Furthermore, our confidence in this unexpected finding is bolstered by several pieces of evidence. In the present study a conceptually parallel finding was observed from a completely different set of data--the abstract picture task (Chapter 8). And, in prior studies residents in high problem areas have revealed a real ambivalence about the presence of co-residents. It's good to have people around because they might help out if there's trouble, but it's bad because people are noisy, nosey, throw litter, and so on. This is most certainly an issue which needs to be further explored, and, ultimately, incorporated into theories of resident-based control.

Finally, the present study described several ways in which patterns of use vary across time of day, weekday vs. weekend, and season. We hope that further research will seek to link up this variation with seasonality and variation in crime, fear, and problems.

CHAPTER 10

SITE-LEVEL PHYSICAL FEATURES IN THE URBAN RESIDENTIAL ENVIRONMENT: UNDERSTANDING PERCEPTION, DETERMINANTS, AND CONSEQUENCES[1]

Ralph B. Taylor
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An explanation is offered of the theoretical importance of physical features at the site level. This conceptual framework draws on defensible space hypotheses, ideas about human territoriality and territorial markers and work on the perception of resident-generated features. The framework suggests that important physical features at the site level may fall into three categories: defensible space features, signs of appropriation, and signs of civility or maintenance. These features may support informal social control by conveying the message, to passers-by and potential offenders, that residents care, and are vigilant. Results suggest that people do link physical features with qualities of residential life. Also, territorial attitudes can predict level of resident-generated features or markers, and the strength of this linkage is invariant across different types of neighborhoods. The effects of physical features on crime-related outcomes were also discussed. Owner status appears to be a pivotal determinant of territorial attitudes and behaviors. In general, results support the hypothesis that site-level physical features may convey clear and multiple messages. The process by which these physical features influence crime-related outcomes may be multichannel.

A Conceptual Framework for Understanding Site-Level Physical Features

In this section we discuss and develop a theoretical framework for understanding the roles of physical features in fostering informal control. Our focus here is on the site or parcel level. This framework then suggests particular relationships which we seek to test. In addition, the framework helps interpret some of the findings obtained in our test of the revised defensible space model.

At the site level the physical features can be roughly placed in three categories: defensible space features, signs of appropriation, and

[1] Portions of an earlier draft of this chapter were presented at the annual meeting of the Environmental Design and Research Association, Charleston (SC), March, 1980; and at an invited colloquium at the University of Connecticut. The authors are indebted to Liz Meyer for her assistance with some of the analyses, and to Whit Drain and Chris Bartlett for completing most of the picture ratings. Dolores Fernandez provided invaluable photographic assistance.

signs of civility. All of these elements can be discussed in the context of human territoriality.

A. Defensible Space Features

Our revised defensible space model (see Chapter 4) and our results suggest that site-level physical features may dampen problems in two ways. These features encourage stronger territorial attitudes and behaviors on the part of residents which, in turn, dampen crime-related outcomes. In addition, defensible space features have a direct effect on crime-related outcomes. This direct effect can come about in two ways. First, the features may be directly perceived and interpreted by potential offenders, who are subsequently deterred. The content or depth of this message may be influenced by the total configuration of physical features of the site level; i.e., the message of a defensible space feature may be conditioned by the presence of other physical features. Second, a defensible space feature (e.g., a very high fence) may directly prohibit a particular behavior. The deterrent value of the feature may be an inherent stimulus property of the item. Thus, via territorial variables, via perceptions of outsiders of potential offenders, or directly, defensible space features may influence crime-related or anti-social behaviors.

Given such various paths of influence, how might we best measure defensible features to capture them? In our operationalization of defensible space features we relied on theoretical and empirical work to date, and on our territorial perspective. The following suggestions emerged: (1) Empirical work which has assessed defensible space features consistently points to the influence of surveillance opportunities (see Chapter 2). Studies such as Brown (1979), Waller and Okihiro (1978), and Pablant and Baxter (1975) all point up the influence of this factor. (2) Real and symbolic barriers are features which have received continuing attention from Newman (1972, 1979). In his most recent work (Newman, 1979) he suggests that symbolic barriers provide zones of transition for residents, and at the same time require that any passer-by make his/her intentions clear. Symbolic barriers, by defining an area as semi-private, provide an aura of exclusion, and perhaps security. Of course, non-residents must be sensitive to these symbols, or they will be ineffective. (3) From a territorial perspective, important features will be those that facilitate access control and control over behavior in particular spaces. This approach suggests that surveillance opportunities, by facilitating residents' control over behavior in particular spaces, will be helpful. Real barriers will be helpful because they facilitate access control. Symbolic barriers may help bound a space and better define it as a territory, or as private property. In sum, our review of theoretical and empirical considerations points to surveillance opportunities, real barriers, and symbolic barriers as key defensible space features.

Of course, it would have been possible to hypothesize and measure additional defensible space features. One might argue that had we done so, defensible space features would have performed more powerfully. Several factors suggest, however, that such an approach would not have been fruitful. First, empirically and theoretically we have measured the most pivotal defensible space features; those which people expect to, and actually have, made the most difference. Thus, additional measures would have been more peripheral to the concepts in defensible space theory, and thus less critical to the testing of defensible space notions. Second, to promote and test new or more peripheral defensible space features is to advocate an endlessly expanding laundry list of features. As the list expands, each element is less likely to receive the full empirical and theoretical attention it deserves. This amounts to sloppy science. Finally, as Gordon (1968) has pointed out, additional and partially redundant measurement of the same constructs results in a weakening of the power of each predictor. As variables are added, the same sized pie is being sliced up into smaller and smaller pieces. Thus, if we had added additional defensible space measures, the chances are that we would have been decreasing the predictive power of each, for only a modest gain in total explained variance. Thus, several factors suggested that the best course of action was to measure the few defensible space features that appear, theoretically and empirically , to be pivotal.

Finally, before closing our discussion of defensible space features, it is worth mentioning that many of these components are fixed or permanent features in the built environments. Surveillance opportunities, for example, depend in part upon construction plans. Some of these features, such as real barriers like fences, can be changed by residents. But, such changes require a considerable expenditure of finances and energy. Also, as Mayhew (1979) has pointed out, once defensible space modifications are in effect they are, for all intents and purposes, irreversible. Given these potential flaws with defensible space features, from a policy or community development perspective it makes sense to explore the possible role of cheaper, more easily altered physical features in the environment. It is for this reason that signs of appropriation or signs of civility may be important.

B. Signs of Appropriation and Signs of Civility[2]

In this section we define resident-generated features which may be important for crime-related outcomes. Two general classes of features are identified: signs of appropriation and signs of civility. We then sketch out a conceptual framework which may help explain why these features are displayed, how they are perceived, and how they impact behaviors. We close with hypotheses.

Signs of appropriation and signs of civility represent two different types of territorial markers. By marking space, users indicate their control over, right to, or attachment to that place. Signs of appropriation are physical cues that a resident cares about, has a libidinal investment in, or is attached to, a place. The form of these displays depends on the type

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[2] This section represents an extension and elaboration of some ideas put forth by Brower (1980), and Hunter (1978).

of territory being occupied. In the spaces of interest to this project -- outdoor, residential spaces -- these signs may be multi-purpose -- announcing territorial claims, showing care, and creating an intimate or memory-producing atmosphere (Tuan, 1976, Ch. 10).

Signs of civility include physical cues that reflect a stable, underlying social order. In civilities intimate underlying social disorder. Civilities would thus include houses and exterior spaces that are in good repair, neat, and tidy. Incivilities would include houses in disrepair, spaces not cared for, litter, signs of vandalism, burned out or vacant buildings, and so on. (There can also be social signs of incivility, such as gangs hanging on streetcorners or people drinking in public.) Hunter (1978) suggests that it is experience with signs of incivility which elevates fear levels, and accounts for the widespread nature of fear. Lewis and Maxfield (1980) found, for example, that people were most fearful of places in their neighborhoods where incivilities were highest. Thus, people need not experience or hear about crime for fear to occur. Conversely, we may expect that signs of civility are associated with lower fear levels.

Given these two types of physical features, we now make several suggestions about the roles these resident-generated elements may play. First, we suggest that residents seek to convey information to co-residents, and to passers-by. Residents not only want to tell others about themselves (e.g., I care about my neighborhood), but they also want to tell others how to behave (e.g., if you walk across my lawn, you'll be in trouble).

The recipients of these messages vary on the dimensions of familiarity, or similarity, and severity of potential threat. Familiarity or similarity is important because as this increases, messages become clearer. On the part of residents, similarity or homogeneity results in agreement about what kind of impression, as a block or as a neighborhood, they actually wish to convey. Similarity between residents and passers-by, or between residents and co-residents who are passing through, means that messages will be better understood, and responded to more appropriately. Threat is important because there is a continuum of offenses that people can commit. Less severe offenses include trespassing, stealing flowers, or littering. Moderately severe offenses would include vandalism or minor property damage, and very severe offenses would include street robbery, burglary, etc.

Our expectation is that while defensible space features such as surveillance opportunities or real barriers may have a dampening effect on moderately to very severe offenses, the messages residents send to one another and to passers-by probably only have a deterrent effect on less serious infractions such as trespassing, littering, etc. Thus, when we're considering physical features in relationship to social-control-related outcomes, different types of features have different ranges of convenience.

Our second point is that the way people convey these messages is through signs of appropriation and signs of civility. Both of these components -- signs of appropriation and signs of civility -- may allow us to infer that residents are attached to place; i.e., they care about where they live.

Our third point is that through these signs of appropriation and signs of civility, residents seek to let co-residents know they are being a "good neighbor," and they seek to trigger a host-guest mode of behavior between themselves and passers-by. Residents want to let co-residents know that they are "good neighbors," and care about the block or the neighborhood. They do this through clean-up and beautification. They keep their property neat, their lawn trimmed, and their house painted. They may beautify through ornaments such as bird baths or pink flamingos, or through flowers and plantings. If a resident is slack in his/her upkeep or maintenance, he/she is likely to receive gentle prods from neighbors. Gans (1967) discusses how residents in Levittown would often bring up the issue of house or lawn maintenance in a jocular fashion. Of course, residents may sometimes be less tactful. The first author had such an experience when he recently moved to a new neighborhood. He had been removing plaster, and transporting it to his garage, which opened on to the alley. One morning, when coming up the alley, he was confronted by another block resident, Mr. X, who swept the alley on a daily basis. Mr. X confronted the author with a bucket that had some pieces of plaster on the bottom. Mr. X demanded to know who this plaster belonged to, and informed the author that "We don't like that kind of stuff in <u>our</u> alley." Thus, co-residents may bring up the issue of maintenance in a variety of ways.

Unfortunately, while we all agree what good maintenance is, we may not agree on what beautification is. The idea of what looks good varies depending upon the sociocultural context. Thus, on a block that is socioculturally heterogeneous there may be confusion about what message is being sent, or how it is being interpreted. A resident may think he is telling his co-residents "I'm a good neighbor" while all they are thinking is "Boy, does he have tacky taste!"

Also, as we mentioned above, with these physical signs residents seek to establish a host-guest relationship between themselves and passers-by. You want the itinerant to feel, as he is passing through, "I'm on someone else's property, and I should respect it." As long as the itinerant behaves as a guest should, residents will leave him be. A hospitality effect, like that observed by Conroy and Sundstrom (1977) in their study of territoriality and dominance, will prevail. The host will accede to the guest. However, should the guest behave "unguestlike," i.e., should he litter or pick flowers, residents will assert their "home court advantage" and become dominant. In Barker's (1968) terms, deviation countering or vetoing mechanisms will come into play. The itinerant will be corrected, reprimanded, reported, or perhaps ejected. (As a footnote we should add that this does get tricky, since the public sidewalk is <u>public</u> property, and thus according to the law, anyone has a right to be there. However, the resident has the law on his side if the itinerant trespasses, or cuts flowers (steals), or litters.) Also, these mechanisms may only come into play if residents do not fear the consequences, or if residents are similar to one another.

This leads to our fourth point which is that these signs of appropriation or signs of civility are no help if they are not backed up by people. People may infer from these signs that there is a hidden force behind them, ready to engage if things go awry. In short, these signs are a proxy for people, and may give us cues about these people's attitudes.

Our fifth point is that as threat increases, territorial displays will diminish or be retracted. People are not about to put out flowers if they know they will be trampled on. People are not about to keep their lawns neat if they know it will be littered with cans and papers the next day. As threat increases, people may retreat and "pull in" their territorial displays. Under conditions of low threat, displays may become more redundant, or extend further.

Our sixth point is that redundancy is important, at the parcel level, and at the block level. If signs of appropriation or signs of civility are minimal, or weak, then only weak or ambiguous inferences about the residents can be drawn, and only a weak message is given to the itinerants.

C. Hypotheses

Given such a conceptual framework as sketched out above, we can draw several hypotheses.

(1) Outsiders will draw inferences, based on signs of appropriation and signs of civility, about the residents whose site is depicted, and about the neighborhood. As signs of civility and signs of appropriation increase, perceivers should infer that residents care more about where they live, and that the neighborhood is safer.

(2a) If signs of appropriation and signs of civility really are manifestations of territorial attitudes, then they should covary with the latter. Thus, territorial attitudes should allow us to predict these signs.

(2b) Common wisdom has it that homeowners are more territorial than renters. If this is the case, then tenure status should correlate with both territorial attitudes, and with markers such as signs of appropriation and civility.

(3) We have suggested that defensible space features may have a greater impact on more severe crime-related outcomes, while signs of appropriation and civility may have a greater impact on less severe crime-related outcomes. Thus, we predict that the relative power of these two classes of predictor variable will shift, as we move from more or less serious outcomes.

Granted, these hypotheses do not provide a complete testing of the ideas sketched out in our discussion of defensible space features, signs of appropriation, and signs of civility. Nonetheless, these hypotheses focus attention on several of the <u>key</u> ideas expressed in that framework. Thus, if the hypotheses are supported, the results at least underpin our outline at some pivotal points.

Method

We first determined if people could draw fairly general, evaluative inferences based on pictures of dwellings. From our full sample of over 900 slides for Survey I sites we drew a sample of 32. This sample of 32 was extremely varied on as many dimensions as we thought might be important. The sample was then shown to several groups of persons who were familiar with the local Baltimore environment. These groups included district planners (n = 12), and local students at a university in the city (n = 15). In addition to obtaining general evaluative ratings of the pictures shown, we also asked people to tell us which physical features in the pictures were important for making those judgements. This open-ended data was then content analyzed.

Subsequently, scales to measure specific physical features in the pictures were developed. Three of these scales were concerned with defensible space, two with appropriation, and two with signs of civility. Two raters then used these scales to judge each slide. The ratings for pictures of the front and back of each surveyed household were then attached to each respondent's survey data.

Results

D. Site-Level Scales

The statements describing the "high" end of each of our seven scales, appear in Table 1. Each of these scales was a four or five category scale, with a statement to describe each point on the scale. Copies of the scales appear in Appendix A.

The intraclass correlations, to assess inter-rater reliability, appear in the last two columns. These figures are based on Survey 1 data. (Figures based on Survey II are almost identical. See Table 1-A.) The last column is the most important one, and indicates the estimated reliability of the mean ratings, based upon averages of the two raters. It is these mean ratings that we used in all subsequent analyses. All of these adjusted intraclass correlations are very respectable: they all exceed .70, and all but three exceed .80. Thus, our rating scales are quite reliable.

E. Relating Physical Features and Perception by Outsiders

We wished to determine if physical features conveyed messages to outsiders. Thus, once our scales were developed, and all pictures were rated, we returned to our sample of 32 slides on which groups of people had made more general ratings. For each general question, we computed the average score, for each picture, across the raters in that sample. We then correlated these average ratings with the scores of each physical-feature rating scale. Through this procedure linkages between evaluative responses, and physical features, could be assessed.

The results suggest that many of the physical features assessed are

Table 1 Inter-Rater Reliability on Site-Level Assessments

Scale	Concept	Arena	Intraclass	Intraclass, adjusted by Spearman-Brown formula
1. From the house, there is an unobstructed view of you as you walk by.	Defensible Space	front back	.73 .79	.84 .89
2. There is a clear boundary between the property and the sidewalk/alley.	Defensible Space	front back	.97 .90	.99 .95
3. There is a barrier that restricts and directs access from the sidewalk/alley.	Defensible Space	front back	.95 .94	.97 .97
4. There is a lot of gardening.	Signs of Appropriation	front back	.86 .83	.93 .91
5. There is a lot of ornamentation.	Signs of Appropriation	front back	.86 .68	.93 .81
6. This is a clean and tidy property.	Signs of Civility	front back	.54 .67	.70 .80
7. The housing unit is in very good condition.	Signs of Civility	front back	.55 .62	.71 .77

Table 1-A

Inter-Rater Reliability on

Site-Level Assessments:

Survey II

Scale	Arena	Intraclass	Intraclass adjusted by Spearman-Brown
1. From the house, there is an unobstructed view of you as you walk by.	Front	.78 (.78)	.87 (.87)
	Back	.86 (.87)	.92 (.93)
2. There is a clear boundary between the property and the sidewalk/alley.	Front	.94 (.94)	.97 (.97)
	Back	.97 (.94)	.98 (.97)
3. There is a barrier that restricts and directs access from the sidewalk/alley.	Front	.91 (.91)	.95 (.95)
	Back	.96 (.90)	.98 (.95)
4. There is a lot of gardening.	Front	.89 (.89)	.94 (.94)
	Back	.77 (.79)	.87 (.88)
5. There is a lot of ornamentation.	Front	.76 (.75)	.87 (.85)
	Back	.74 (.77)	.85 (.87)
6. This is a clean and tidy property.	Front	.66 (.65)	.79 (.79)
	Back	.64 (.67)	.78 (.80)
7. The housing unit is in very good condition.	Front	.50 (.49)	.67 (.66)
	Back	.71 (.76)	.83 (.86)

Note. Numbers in parentheses represent coefficients if the missing value code (0), was included as a valid data value.

related to several evaluative dimensions. The results based on our sample of 15 UMAB students appear in Table 2. The following connections appear. (1) A space appears to be private property if it is clean and tidy, the house is in good condition, and there are ornaments. (2) It looks like people take care of the space if there's gardening, ornamentation, the property is neat and tidy, and the unit is in good condition. (3) It looks like a house in a safe, upper income neighborhood if there's gardening, a neat appearance, the unit is in good condition, and there is a lack of surveillance opportunities. (4) A person would feel watched if he/she was in a space, and residents would feel safe at night, if there's gardening, neatness, and the unit is in good condition. (Note that throughout "the space" refers to the private property adjoining the housing unit.)

It is clear that these raters relied most heavily upon signs of appropriation (scales 4 and 5), and signs of civility (scales 6 and 7) as cues for their inferences. Given that defensible features are more fixed, and less clearly resident-generated than signs of appropriation and incivility, this bias is understandable. Answers to most of our general evaluative questions are partially contingent upon guessing what people are like in that household, and in that neighborhood. Thus, when asked questions about what the residents are like, it makes sense to rely most heavily on elements in the environment that are most clearly a function of residents' efforts, or lack thereof.

We conducted another rating session, using the same 32 slides, with a pool of twelve district planners. The results, based on average ratings, across all planners, for each picture, appear in Table 3.

The linkages in Table 3 are, in several respects similar to the inferences made by the UMAB students. For example, the planners estimate that high levels of gardening, cleaner and tidier property, and better unit condition, go along with: residents who take care of their property; a higher income, safer, neighborhood; an invader being noticed and watched by a resident, or neighbor; and feeling safer there at night. These linkages also surfaced with the UMAB group suggesting that these inferences are fairly steady or reliable across disparate groups of raters.

At the same time, however, these same linkages made by the planners were more complex than those made by the UMAB students. Specifically, the planners when asked about several resident characteristics, tied in a greater number of physical elements. With the students, symbolic and real barriers were little used in making inferences: the former showed no significant correlations, and the latter only two. By contrast, with the planners symbolic barriers were correlated with five statements, and real barriers with six statements. The planners' ratings suggested that higher levels of real and symbolic barriers were associated with: greater watchfulness over intruders on the part of residents and neighbors; greater feelings of safety if in that space; and a safer neighborhood. Thus, for the planners, defensible space barriers, both real and symbolic, were tied with estimates of resident-based vigilance and neighborhood safety.

Table 2

UMAB Students:

Correlations of Physical Ratings with General Ratings

		1 Surveil-lance	2 Symbolic Barriers	3 Real Barriers	4 Gardening	5 Ornamentation	6 Clean&Tidy Property	7 Unit in Good Condition
	1. If you went into the space you would have the feeling you were on someone else's property.					.37	.38	.56
	2. The people who live here take care of the space.				.65	.30	.66	.72
	3. This is an upper income neighborhood.	-.37			.56		.54	.60
GENERAL	5. If you should go into the space the resident is like likely to watch you.				.50		.48	.71
GENERAL	6. This is a safe neighborhood.	-.40			.56		.55	.68
	7. If you lived in this house, you would be nervous about being alone in the space at night.				-.44		-.54	-.58
	8. Something left out in the space is an easy target.	.38		-.36				
	9. If you should go into the space, a neighbor is likely to watch you.			.30				

Note. All correlations significant at $p<.05$ ($n=32$)

Table 3

Planners:

Correlations of Physical Ratings with General Ratings

	Physical 1 Surveillance	2 Symbolic Barriers	3 Real Barriers	4 Gardening	5 Ornamentation	6 Clean&Tidy Property	7 Unit in Good Condition
1. If you went into the space you'd have the feeling you were on someone else's property.				.44	.37	.46	.65
2. The people who live here take care of the space.			.31	.68		.59	.73
3. This is a low income nbhd. neighborhood.				-.68		-.60	-.66
4. If you should go into the space, the resident is likely to notice you.		.35	.36	.58		.50	.67
5. If you should go into the space, the resident is likely to <u>watch</u> you.		.33	.37	.53	.34	.56	..70
6. This is a safe neighborhood.		.32	.35	.70		.63	.70
7. You would be nervous about being alone in the space at night, if you lived here.		-.40	-.37	-.71	-.30	-.55	-.64
8. Something left out in the space is an easy target for a burglar.							-.46
9. If you should go onto the space, a neighbor is likely to watch you.		.30	.30	.45	.50	.40	.61

<u>Note</u>. All correlations significant at $p<.05$ ($n=32$).

Although we have no hard evidence, it is interesting to consider the different pattern of results obtained in the two samples. Two points need to be emphasized. First, the same sample of slides was used with each group. Thus, the differences cannot be attributed to different stimuli. Second, the basic pattern revealed by both samples was essentially similar. Both groups linked signs of appropriation and signs of civility with the evaluations in the expected manner. The discrepancy between the samples arose in that the planners embellished some of these basic connections by tying in additional physical features. The discrepancy between the sample may be determined by the planners' increased familiarity with the sites they viewed. Spending much of their time out on the streets they are better attuned to some of the variations which actually exist in housing and site conditions. Or, the discrepancy may be a function of the biases of the discipline. As planners, they may share a common belief that particular physical elements, such as defensible space features, can be effective, or at least indicative of some local characteristics. That is, through their discipline they have acquired preconceptions about the role of the physical environment. We reiterate at this point that our guesses about the causes of the differences between the two samples are just that -- guesses.

Nonetheless, the pattern of results revealed here does suggest that it may be fruitful to investigate how offenders or potential offenders perceive defensible space features, signs of appropriation, and signs of civility. As a group their eye may be even more "practiced" than that of the planners, revealing an even more complex pattern. Of course, this is an empirical question awaiting further research.

In summary then, the results of this section have explored perception, by outsiders, of site-level physical features. Two groups of raters used signs of appropriation and signs of civility to make the hypothesized inferences about residents, and about the areas depicted. The planners, in addition to the signs, also used defensible space features to make the same inferences. Thus, site-level physical features can convey messages to outsiders about various resident behaviors and attitudes.

F. Predicting Resident-Generated Features: A Territorial Approach

Territorial attitudes and territorial behaviors play an important role in our revised defensible space model (see Chapter 4). One of the assumptions made by that model is that there is a close covariation between territorial attitudes and behaviors. Although this assumption has received support in prior studies (Edney, 1972; Patterson, 1978; Taylor and Brooks, 1980), it has not been tested with a sample of the general population. Thus, we felt it was important to test such a linkage with the present study. We hypothesize that stronger signs of appropriation and stronger signs of civility would be associated with stronger territorial attitudes; i.e., a lower level of problems, better insider/outsider recognition, and more responsibility.

Given that we have assumed a covariation between territorial attitudes and behavior, it was necessary to decide which should be the predictor variable, and which should be the outcome. We chose to treat the behaviors as outcome variables for two reasons. First, there were fewer variables measuring behaviors (i.e., signs) than attitudes. Thus, it was easier to actually pick a behavioral as opposed to an attitudinal outcome. Second, we were much happier with predicting a "hard" behavioral outcome, the reliability and predictive validity of which we have already determined. Another issue which had to be dealt with was the issue of neighborhood context. As we saw in Chapter 6, the neighborhood context did influence some territorial attitudes. In order to control for this, we entered an effect code which contrasted our low-income, rental neighborhoods with our medium income, homeowned neighborhoods.[3]

We attempted to predict gardening in back, and unit condition in front. These are two signs that showed acceptable variance in Survey I, and are important conceptually and empirically. We used stepwise, hierarchical regression set within an analysis of covariance framework (Cohen and Cohen, 1975, Ch. 5). In each of the two regressions we proceeded as follows. On the first step we entered our covariate to control for neighborhood context. On subsequent steps we entered the territorial attitudes which correlated significantly with the outcome in question. The attitudes were entered in a pre-determined order: attitudes relevant to the home space in question, attitudes relevant to the adjoining near-home spaces, attitudes toward other home and near home spaces, and attitudes toward off-block spaces. On the last step the cluster of covariate X predictor interactions were entered to test the assumption of homogeneity of regression. If these interactions <u>fail</u> to add a significant increment in R^2, this suggests that the predictors operate with equal effectiveness across the range of neighborhoods assessed.

The results of the regression predicting gardening in back appear in Table 4.[4] Our neighborhood covariate explains a significant amount of outcome variance: gardening is higher in the medium-income, homeowned neighborhoods than in the low-income rental neighborhoods. The territorial attitudes, entered on subsequent steps, add an additional 12.7% explained variance, and the increment is significant. The predictor X covariate interactions, added on the last step, failed to add significant variance, thus supporting the assumption of homogeneity of regression. Thus, as predictors, the territorial attitudes operate with equal effectiveness across neighborhoods.

More specifically, the territorial predictors operated as follows. Higher levels of gardening were associated with: fewer problems in home and

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[3] Of course, it would have been possible to enter more variables to control for neighborhood context. Additional covariates, however, would have drastically increased the number of covariate X predictor interaction terms, thereby making the analysis unwieldly. And, the one covariate we did enter accounts for the bulk of our variation across neighborhoods.

[4] We do not present betas for the following reason. Many of the territorial attitude predictors are highly correlated with one another. Thus, as the stepwise regression proceeded, the standard errors of the B weights increased, and the B and beta weights showed a reduction in size, since several variables were competing with each other.

Table 4 Predicting Gardening in Back

Source of Variation	Increment in R^2	
Covariate	.113	$F(1,445) = 56.69$, $p < .001$
Territorial Cognitions	.127	$F(14,431) = 10.64$, $p < .001$
(Covariate x Cognitions)	.041	$F(14,417) = 1.70$, ns
Total $R^2 = .28$		$F(29,417) = 5.59$, $p < .001$
Adjusted $R^2 = .26$		$F(29,417) = 5.05$, $p < .001$

near home spaces; better ability to distinguish insiders vs. outsiders in spaces behind the house; feelings of more responsibility toward the alley, and a lesser ability to distinguish between insiders and outsiders in off-block spaces. Thus, except for off-block spaces, the territorial attitudes operated as hypothesized.

In addition, out of the whole group of attitudes, one of the strongest predictors was ability to distinguish insiders vs. outsiders in back spaces. This linkage is probably due to the fact that if people are out back gardening they will see people passing by, and perhaps chat with them. Through such passive contacts (Festinger, Schachter, and Back, 1950), residents may rapidly learn who belongs, and who does not. This is probably a good example of how territorial attitudes and behaviors are intimately intertwined in a system-like fashion.

The regression predicting the condition of the front of the housing unit appears in Table 5. The neighborhood context adds a significant amount of variance: units in medium-income, homeowned areas are in better condition than in low-income, rental areas. The territorial attitudes also added a significant amount of variance (6%). In this cluster the strongest association was between a higher level of problems in front spaces, and poorer unit condition. Finally, on the last step the covariate X predictor interactions failed to add a significant amount of subsequent variance, thus supporting the assumption of homogeneity of regression.

In sum then, controlling for neighborhood context these results suggest that territorial attitudes are significant predictors of territorial behaviors, as manifested through signs. And, these territorial attitudes operate with equal power across various neighborhoods.

G. A Modest Digression: The Territorial Implications of Owner/Renter Status

In the preceding analysis we examined percentage rental as a component of neighborhood context. We also felt it would be worthwhile to explore the individual-level correlates of homeownership. Traditional wisdom has it that homeowners care more about their property, keep it up better, and in general are more proprietary.

The simple correlations between owner/renter status, and our territorial variables, appear in Table 6. By and large the conventional wisdom is confirmed: ownership goes with more territorial markers (except for decorations in front), and stronger territorial attitudes toward spaces on the block.

Perhaps more importantly, and more unexpectedly, owner/renter status remains a powerful predictor of territorial attitudes and behaviors when socio-economic variables, such as income and education, are controlled for (see Table 7). What is striking in Table 7 is the fact that the second-order partials are in many cases almost the same size as the zero-order correlations. Thus, net of socio-economic considerations, ownership status is a powerful driver of territorial functioning.

Table 5

Predicting Condition of Unit in Front

Source of Variation	Increment in R^2			
Covariate	.118	$F(1,445) =$	6.02,	$p < .001$
Territorial Cognitions	.060	$F(12,433) =$	2.63,	$p < .01$
(Covariate x Cognitions)	.027	$F(12,421) =$	1.19,	ns

Total R^2 = .21 $F(25,421)$ = 4.34, $p < .001$

Adjusted Total R^2 = .16 $F(25,421)$ = 3.21, $p < .001$

Table 6 Relationship Between Territorial Variables and Owner/Renter Status

Territorial Markers

Variable	Correlation	p<
Decorations in Front (MNFSC5)	-.15	.001
Decorations in Back (MNBSC5)	.11	.05
Gardening in Front (MNFSC4)	.31	.001
Gardening in Back (MNBSC4)	.42	.001
Condition and Tidiness (MNFB67)	.52	.001
Territorial Attitudes		
Problems in Home Territories (TR1A)	-.16	.001
Problems in Near-Home Territories (TR2A)	-.14	.01
Problems in Off-Block Territories (TR3A)	-.04	NS
Recognition in Home Territories (TR1B)	.16	.001
Recognition in Near-Home Territories (TR2B)	.15	.001
Recognition in Off-Block Territories	-.18	.001
Responsibility in Home Spaces (TR1C)	.26	.001
Responsibility in Near-Home Spaces (TR2C)	.21	.001
Responsibility in Off-Block Spaces (TR3C)	.03	NS

Note. 1 = rental status; 2 = owner status

H. Site-Level Features and Crime-Related Outcomes

The conceptual framework which we outlined earlier suggested that particular site-level features were most relevant to particular outcomes. Specifically, "harder" elements such as defensible space features are better related to "harder" outcomes, such as fear, while "softer" resident-generated features are better related to "softer" outcomes such as problems or nuisances. Some regressions that we performed substantiated this expectation.[5] Signs such as gardening in back perform more poorly, in terms of variance explained, than defensible space features when fear is the outcome of interest. When "softer" outcomes such as problems are the outcome, however, then signs, such as gardening, out-perform defensible space features. Thus, the deterrent value of particular site-level features depends upon the outcome assessed.

Discussion

To summarize, the results presented have indicated the following: (1) outsiders perceive and interpret site-level, physical features as indicative of the residential environment; (2) territorial attitudes are significant predictors of territorial markers; (3) homeownership status is correlated with territorial attitudes and markers; and (4) the deterrent value of particular site-level features depends upon the type of outcome considered.

Such results provide support for a territorial perspective on links between the physical environment and social behavior. As residents become more territorial, and put out more signs, outsiders perceive that residents care more, look out more, and live in a safer place. And, the presence of residents who feel and act more territorial is associated with a more smoothly functioning local ecology.

Although the general outline of these linkages is clear, the processes undergirding these connections are less obvious. We hazard the following tentative suggestions regarding these processes. First, site-level features are linked with perception and behavior in a multitude of ways. In Chapter 12 we discuss deterministic, interactionist, and interpretive perspectives on physical environment -- social behavior links. Processes relevant to all these perspectives may be simultaneously at work. In a deterministic fashion, a high fence may deter would-be intruders. In an interactionist fashion, different people may perceive and respond to physical elements differently. In an interpretive fashion, people use physical elements to decode what it's like to live someplace. Thus, clusters of physical features, and perhaps individual physical features as well, may influence behaviors via the simultaneous operation of several systems. Hard features such as defensible space elements <u>may</u> rely more heavily on deterministic systems for their impact than resident-generated features do.

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[5] Detailed information about particular variables is available upon request from the first author.

In addition, physical features and behavior may be bound up in a system-like process of reciprocal influence. On some blocks a low level of problems may, over time, lead to the planting of flowers by residents. On other blocks, residents may put out flowers despite high levels of problems. Over time, such heightened territorial attitudes and behaviors may lead to a decline in problems.

Finally, the ability of outsiders to "read" territorial signs and defensible space features, and the differences noted between the two groups examined here, suggests that it may be very profitable to investigate how offenders, or potential offenders, read physical cues in the environment. Of course, as noted in our conceptual framework, physical cues send messages to co-residents as well as potential offenders. Thus, the utility of any particular physical element depends on its role vis-à-vis several groups of potential recipients, and should not be narrowly judged.

Appendix A

Site-Level Scales

General Instructions to Raters

You wil be seeing slides of the Baltimore residential environment. Some of the slides show the fronts of houses, and some show the rear. Some of the houses have property or small yards in front, while other houses abut directly onto the public sidewalk.

You will be judging these slides on several rating scales. Each rating scale has four or five categories. For each category on a scale there is a picture of a typical house front and typical house back that falls into the middle of that category. There is a definition for each category on the scale.

To warm up, you should proceed as follows:

1. Read through the definitions for all the scales and scale categories carefully. Take a close look at the typical examples for each category. If you have questions that are not answered by the notes, ask.

2. Go over, for each rating scale, four or five slides, and try assigning each to a scale value.

3. Start going through the full set of slides. Work on only one scale at a time. As you get used to the scale, it should move along more quickly.

4. Work carefully, but don't spend an inordinate amount of time on each slide.

5. Assign all pictures, even if your assignment is a guess.

6. Do not confer with your co-rater. We want the two of you to be making independent judgements.

SCALE 1

From the house, there is an unobstructed view of you as you walk along the
front-sidewalk immediately in front of the house
back-alley immediately behind the house.

Notes 1. View points can be windows, glazed doors, and porches attached to the house. Do not regard exterior steps as view points.
2. Do not consider window curtains or blinds as obscuring view.

SCORES.

1. Little or no opportunity for someone in the house to see you.

Notes Consider absence of doors and windows.

2. You can not be seen along all or most of the walkway.

Notes Consider continuous site features that come between you and the view points - high walls, dense bushes, overhanging leaves.

3. You can be seen along most of the walkway, but there are places where you cannot be seen.

Notes Consider single or intermittent site features that come between you and the view points - a bush, a short wall.

4. You can be seen along all of the walkway, but not from most view points.

Notes Consider site features that block out some view points but not others. It may be, for example, that there is a continuous view from the upper floor, but no view at all from the lower floor; or that one section of the walkway can be seen from one view point and the remaining section from another.

5. You can be seen along all of the walkway from most view points.

SCALE 2

There is a clear boundary between the property and the
front - sidewalk
back - alley

Notes: If property is divided into portions where part is clearly defined and part is not rate only part that is defined.

SCORES.

1. One can't tell for sure where the property ends and the public walkway begins.

2. One can tell where the boundary line is only because there is a change in surface material or treatment between private and public space.

   Notes: For example concrete/grass, or rough/smooth.

3. The boundary line of the property is defined by an edge feature that is less than 20" in height. Apart from this, there is no change in surface material or treatment between private and public space.

   Notes: For example a change in level, a low railing or wall, a line of shrubs.

4. The boundary line of the property is defined by
   1 - an edge feature that is less than 20" in height and by
   2 - a change in surface material or treatment.

5. The boundary line of the property is defined by an edge feature that is more than 20" in height.

   Notes: A fence, for example, or a high hedge. With such an edge condition, score 5 whether or not there is a change in general surface material or treatment.

0. One cannot tell from the slide whether or not there is a clear boundary.

SCALE 3

There is a barrier that restricts and directs access from the
front - sidewalk
back - alley

onto the property.

SCORES.

1. There is no barrier, and no defined point of entry from the public walkway onto the property.

   Notes: For example, a front yard that is paved as an extension of the sidewalk, or a back yard with no fence and no path.

2. There is no barrier, but there is a defined point of entry from the public walkway onto the property.

   Notes: For example, no fence or gate, but a path leading onto the property.

3. There is a barrier less than 20" in height, with a defined point of entry through the barrier.

   Notes: The barrier is of a height that can be stepped over. It can be a low wall, or a railing, or planting or a steep bank.

4. There is a barrier more than 20" in height, with a defined point of entry through the barrier.

   Notes: The barrier is of a height that must be climbed. It can be a wall or a fence or a hedge or a steep bank. The point of entry should not have a gate.

5. There is a barrier more than 20" in height with a controlled point of entry through the barrier.

   Notes: This means, in essence, a wall or a fence with a gate that can be closed, whether or not the gate is shown shut in the photograph.

0. Can't tell if barrier exists, or has controlled or uncontrolled point of entry.

SCALE 4

There is a lot of gardening.

Notes Gardening refers generally to in-ground planting. It does not refer to moveable flowerboxes. (A large flowerbox on the ground may, however, be considered a raised planter).

Scores should reflect the nature and extent of gardening, and not whether the garden is well tended or attractive.

SCORES.

1. Little or no attempt at landscaping.

   Notes The land may well be clean, but it is unimproved, just wild, or dirt, or weeds.

2. Landscaping does not allow for gardening.

   Notes This will generally mean paving.

3. Most of the site is given over to low demand gardening although there may be prominent high-demand beds.

   Notes High demand gardening refers to flowers or vegetables that require regular planting, weeding, pruning, watering, fertilizing, etc.

   Low demand refers to plants like trees, shrubs, grass or ivy that demand only occasional pruning and cutting.

4. Half the site or more is given over to high-demand gardening.

0. The space is not visible in the slide (obscured by wall, planting, etc.).

SCALE 5

There is a lot of ornamentation.

Notes 1. Ornamentation refers to something that has been applied or added to the structure or the space in front or behind it, that cannot be justified simply for utilitarian purposes or to satisfy social convention.

2. Planting in moveable pots or boxes should be considered as ornamentation, whether on ledges, hanging or on the ground. In-ground planting should not be considered to be ornamentation.

3. Decorative objects displayed in the windows, whether inside or outside should be considered to be ornament if they are not standard items of furnishing (e.g. shutters or awnings).

4. Paint, pattern or styling of utilitarian objects can be considered to be ornamentation if they appear to have been selected (rather than built in as part of the structure) and if they are usually distinctive (e.g., gas lamps).

SCORES

1. No ornamentation.

2. Ornaments on the structure, but none or virtually none in the space.

Notes Structure includes porch and steps as well as walls, windows, doors etc. of the house. Examples include pottery cats, decorative name plates, hanging pots of plants, etc.

3. Ornaments in the space but not on the structure.

Notes Examples include bird-baths, witch balls etc.

4. Ornaments both on the structure and in the space.

5. Unusually vivid ornaments or ornamental arrangements.

Notes As score 4, but a bonus score for unusually prominent or distinctive decorative items. For example, groups of statuettes on lawn, multicolored painted surfaces, decorative borders, etc.

0. The space is not visible in the slide - obscured by wall, planting, etc.

SCALE 6

This is a clean and tidy property.

Notes
1. Cleanliness implies the absence of litter, trash, garbage, etc.
2. Tidy implies an orderly arrangement of elements, and evidence of care - grass cut and edged.
3. Consider space only, and not the main structure, but include as part of the space, fences, gates, planting, paving, decorative objects and any other non-structural items.

SCORES.

1. The property shows neglect and there are no signs that it is used other than for trash.

2. The property is dirty and/or untidy.

   Notes Yards used mainly for storage of bulky items should be included in this category.

3. The property is clean and tidy.

   Notes The property is well kept up and there is no, or virtually no storage.

4. The property is manicured.

   Notes As 4, but a bonus point for unusually high standard of maintenance and order.

0. The space is not visible in the slide (obscured by wall, planting etc).

SCALE 7

The housing unit is in very good condition.

Notes 1. Include both the house itself and any adjunctive permanent structures whether attached to the house (as in the case of a porch) or separated from it (like a garage).

2. Consider structural condition - Sagging roofs or floors, bulging walls, cracks, etc.

3. Consider also routine maintenance - peeling paint, broken gutters, broken windows and doors.

SCORES.

1. Poor structural condition.

2. Reasonable structure, poor maintenance.

3. Reasonable structure maintenance.

4. Structure in reasonable condition and good maintenance.

0. Unit not visible in the slide - obscured by wall, planting, etc.

CHAPTER 11

Examining Neighborhood Identification[1]

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Extrapolating the major model used throughout the study, we examined neighborhood identification, in the form of knowing a neighborhood name. We hypothesized that as territorial functioning strengthened, and that as local social ties strengthened, neighborhood identification would also increase. Path analyses were carried out on block-level data, and on pooled within-block data. At both levels of aggregation, local social ties resulted in stronger neighborhood identification. Thus, results confirm that local social networks can enhance areal-level attachment.

Introduction

The present chapter examines the problem of neighborhood identification. Neighborhoods are an enduring and ubiquitous feature of urban residential life. Neighborhoods are important because they may facilitate many functions: delimiting dangerous areas that should be avoided, and safe areas where one can feel at ease (Suttles, 1972); fostering continuity of residential character (Firey, 1945); providing a spatial arena within which voluntary associations may develop (Mann, 1970; Gans, 1967); and furnishing symbolically defined areas (Hunter, 1974) that may enhance residents' ability to orient themselves in the urban mosaic.

Roughly, neighborhood identification refers to the ability or willingness of residents to name, spatially delineate and agree upon the part of the city within which they live. Residents' ability to identify their neighborhood is positively associated with their attachment to the area (Hunter, 1974; Gerson, Streuve, and Fischer, 1977), and their positive evaluation of the area (Hunter, 1974).

Neighborhood identification, however, is problematic. Residents rarely exhibit consensus about what their neighborhood is called, or how far it

[1]Our use of the term identification follows that offered by Webster (1967): "Orientation of the self with regard to something (as a person or group) with a resulting feeling of close emotional attachment."

extends.[2,3] Studies which have observed disagreement about the neighborhood name include Hunter (1974). Studies which have observed disagreement about the neighborhood boundaries or area include Ross (1962), and Lee (1970). Haney and Knowles (1978) conducted a study which observed consensus on neighborhood boundaries. However, in this study a relaxed definition of consensus was used, and only two neighborhoods were examined.

The failure to observe consensus on neighborhood identification has had practical and theoretical ramifications. On the practical side, Keller (1968) has suggested that resident perceptions should not be used to define neighborhood areas. On the theoretical side, she has proposed that neighborhoods vary on "neighborhood potential" which is a function of the geographic[4], historical, social, and cultural distinctiveness of a residential area. Furthermore, she suggested that if potential is high, consensus among residents is likely, and that if potential is low, consensus is unlikely.

The failure to observe consensus has also drawn mixed reactions from the research community. Some have felt that the lack of agreement was a "non-finding," and thus not worthy of further investigation. Others have felt that the disagreement was important and researchable. This latter train of thought is evident in the work of Lee (1970) and Hunter (1974). Interviewing residents in an English town, Lee (1970) found that neighborhood size was reliably associated with patterns of use and social interaction in the local environment. Based on interviews with residents in 75 natural areas in Chicago, Hunter observed that the likelihood of knowing the neighborhood name and boundaries, and size of neighborhood area, increased as length of residence, occupational status, and membership in or familiarity with local organizations increased.

We also feel that the lack of agreement on neighborhood identification is important. This sentiment stems from the expectation that strength of neighborhood identification, and the covariates of identification (evaluation and attachment), are related to outcomes such as fear and crime. Areal identification may facilitate residents' interest in, concern about, and control over local events, thereby reducing crime and fear. Suttles (1972) provided an example of this line of thought when he suggested that increasing fear was associated with smaller definitions of neighborhood areas. In short, neighborhood identification may have important practical consequences for the quality of residential life, as well as symbolic and cognitive consequences.

We propose to adopt a territorial perspective on the problem of neighborhood identification, and hope to resolve the blurry conceptual outline of this

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2 The reader should note that this conclusion differs markedly from one recently drawn by Rapoport (1977). He concluded that people agree strongly about neighborhood extent. But, this agreement centered around <u>core areas</u> in neighborhoods, upon which there was considerable consensus. Agreement about entire neighborhood extent, is less likely.

3 See also Hunter (1974, p. 217, Note 10).

4 There has been extensive discussion about what physical or geographical features should be incorporated into neighborhood plans. Most of these discussions derive from neighborhood unit theory (Perry 1929; Dahir, 1947; Tannenbaum, 1948; Isaacs, 1948; Mumford, 1956).

problem. Concomitantly, the predictors of identification are reduced in number, and are theoretically dictated. The territorial perspective we have adopted is multidisciplinary, empirically based (Brower, 1980; Taylor, 1978; Taylor, Gottfredson and Brower, Note 1; Taylor, Gottfredson, Brower, Drain, and Dockett, 1980), and includes the following suggestions. Homogeneity of residential blocks[5], i.e., a consonant social context (Rosenberg, 1972), is associated with the development of local, on-block, social ties. Homogeneity and the development of these ties are associated with particular territorial attitudes, i.e., feelings about residential spaces that are regularly used. Specifically, stronger ties are associated with fewer control-related problems (e.g., vandalism, unwanted intrusions), with feelings of stronger responsibility for what goes on in these spaces, with heightened ability to distinguish insiders from strangers, and with perceiving more of the block as home.

In the present study we examine the ability of these social and territorial variables to predict several aspects of the neighborhood identification. The component of neighborhood identification examined was knowledge of a neighborhood name.

Specifically, we sought to test the followng hypotheses. Strong neighborhood identification is associated with a consonant or homogeneous social context, with stronger and more extensive local ties, and with territorial cognitions (specifically: fewer control-related problems, and more responsibility).

Before abandoning theoretical issues, two further comments are in order. First, our treatment of subjective definition of neighborhood is much less differentiated than the treatment used by others (cf. Rapoport 1977, p. 167). Nonetheless, our simple approach, although less elegant than a more multidimensional approach, still is valid in and of itself. Second, the fact that our investigation takes place in Baltimore, where neighborhood names are a salient feature, means that some results may not be relevant to urban areas which do not have names for local areas (e.g., Milwaukee, Providence). Nonetheless, at least our results will be relevant to the many cities which have salient neighborhood names (Boston, Chicago, Pittsburgh, San Francisco, and so on).

Results

A. Analysis Overview

Our main outcome of interest was thus whether or not respondents could supply a neighborhood name. We analyzed our results at two levels: at the block level, and at the individual level controlling for block means. (Note

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[5] For our purposes a block was defined as the residential units facing each other across a street. This is often referred to as the two sides of the streetface, or the blockface. Prior research in Baltimore City (Brower, 1979) has indicated that the blockface is more likely to become a social unit, than the four sides of a block.

that even though our outcome variable on the survey was a dichotomous variable, 0=no, 1=yes, the outcome as we analysed it was a continuous variable. Thus, standard, recursive causal analysis was appropriate.) Based on our major model, we developed causal models to predict neighborhood identification. The model suggests that local social ties will directly enhance neighborhood identification, and indirectly enhance such functioning through a strengthening of territorial functioning.

As in Chapter 6, we applied recursive path analysis. Also, as in Chapter 6, we eliminated redundant variables from the matrix of predictors until the matrix was no longer multicollinear, according to the Haitovsky test. (Path analysis was also carried out on the full matrix of block-level predictors, and the same pattern of results emerged.)

B. Block-Level

The decomposition of effects, and interpretation of effects based on the path analysis, appear in Tables 1 and 2. The results are diagrammed in Figure 1.

As hypothesized, local social ties have a sizable and significant impact on neighborhood identification (p_{ji} = .238). Blocks where more residents belong to a local organization are blocks where more people can supply a neighborhood name. And, the bulk of the impact of social networks is in the form of a direct effect. The impact of local ties on territorial problems was minimal.

As expected, increasing territorial problems resulted in weaker neighborhood identification. This effect, although sizable (p_{ji} = -.169) was not significant.

Two demographics played a major role in the causal model. Increasing education had a significant direct enhancing effect on neighborhood identification (p_{ji} = .272), and also indirectly enhanced identification through a strengthening of local ties (p_{ji} = .312). Race had a significant direct dampening effect on identification (p_{ji} = -.344); identification was weaker on blocks with a higher proportion of non-white residents.

In short, the block-level results provided strong support for our hypothesis concerning social ties, and more modest support for our hypothesis about the consequences of territorial functioning. They also revealed that sociocultural context has an important influence on identification.

C. Individual Level (Pooled Within-Block Residuals)

The results of the individual-level path analysis appear in Figure 2.

As hypothesized, social ties, in the form of organizational membership, reveal a significant direct enhancement of neighborhood identification (p_{ji} = .077). Contrary to hypothesis, territorial functioning has little

Figure 1

Reduced Block-Level Path Model Predicting

Knowledge of Neighborhood Name

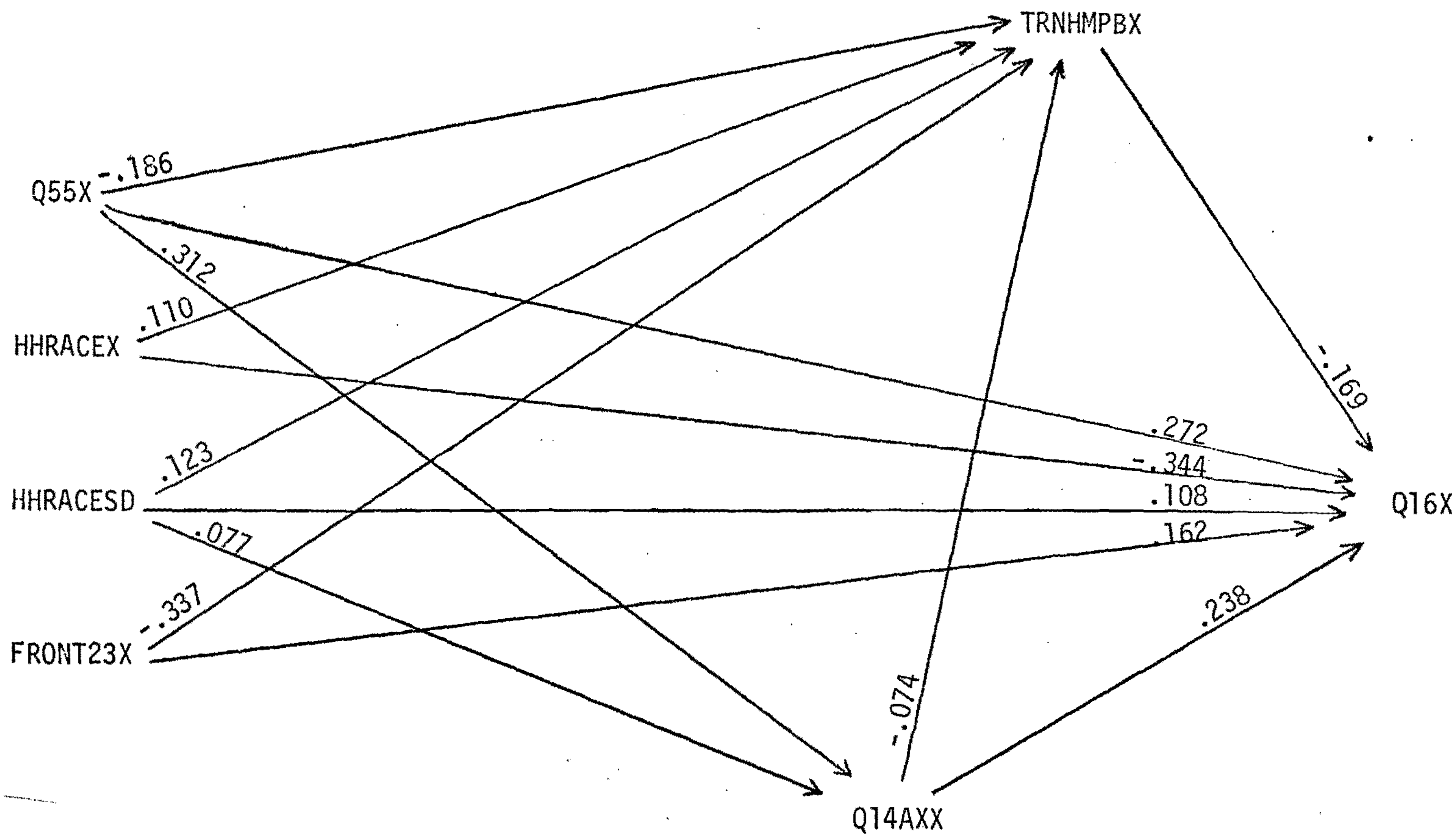


Table 1

Decomposition of Effects:

Block Level Model of Neighborhood Name

Pre-determined Variable	Dependent Variable X_5	X_6	X_6	X_7	X_7	X_7
(X_1) Q55X	0.31163	-0.20849	-0.18554	0.38118	0.30305	0.27167
(X_2) HHRACEX	-0.00147	0.11046	0.11035	-0.36332	-0.36295	-0.34429
(X_3) HHRACESD	0.07654	0.11690	0.12254	0.10598	0.08679	0.10751
(X_4) FRONT23X	-0.03146	-0.33473	-0.33705	0.21097	0.21886	0.16186
(X_5) Q14AXX			-0.07367		0.25072	0.23827
(X_6) TRNHMPBX						-0.16912
(X_7) Q16X						

Residual Coefficient

$\sqrt{1-R^2}$ .940 .892 .623

Note. All variables are block-level means. Q55X = years of education HHRACEX = proportion of non-white households. HHRACESD = variability of racial composition on the block. FRONT23X = real and symbolic barriers in front. Q14AXX = membership, along with co-residents, in local organization. TRNHMPBX = problems in near-home spaces. Q16X = knowledge of a neighborhood name.

Table 2

Interpretation of Effects:

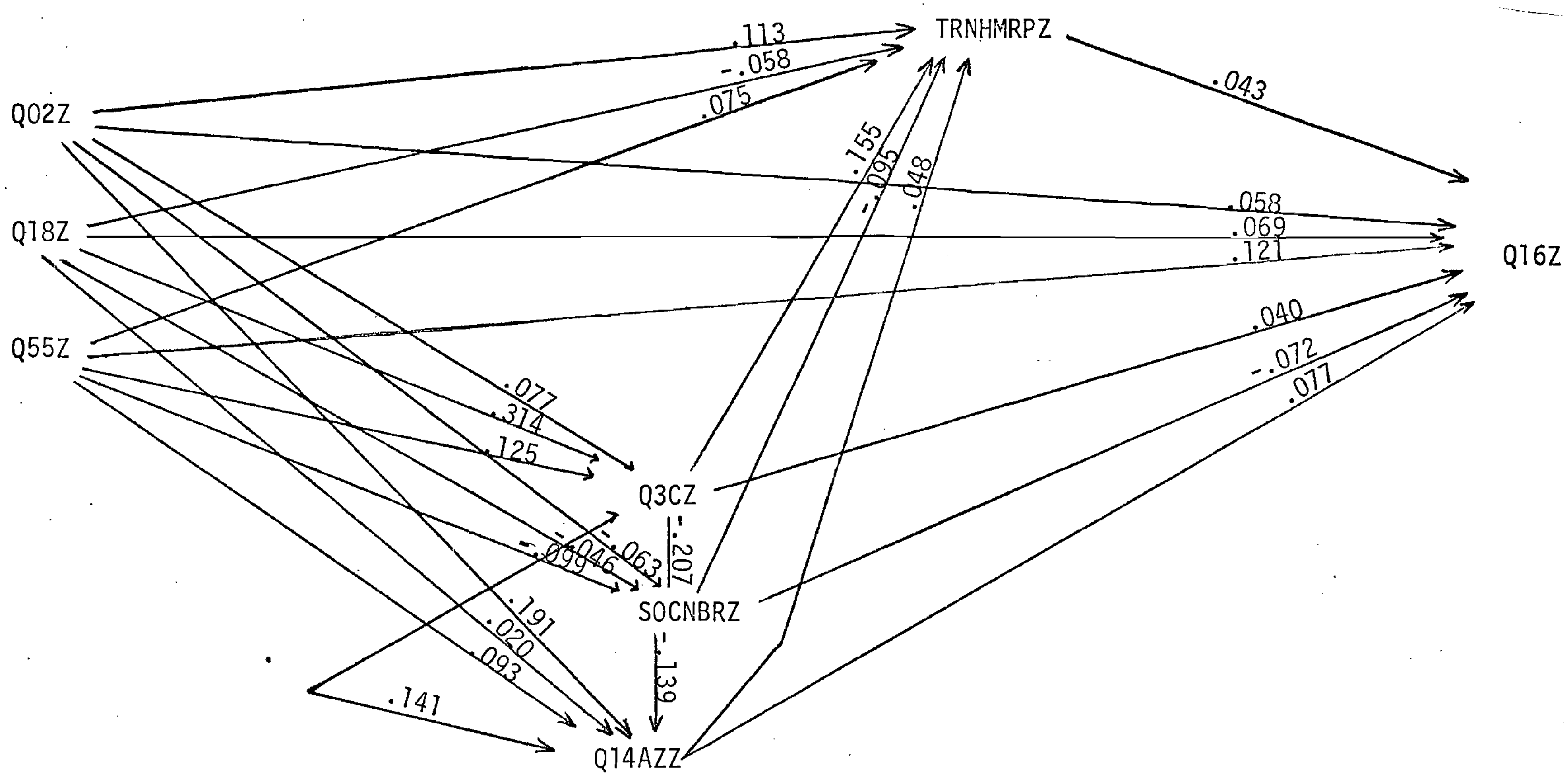
Block-Level Reduced Model Predicting Knowledge of Neighborhood Name

Outcome	Predictor	Total Effect	Indirect Effect Via: X_5	Indirect Effect Via: X_6	Direct Effect
(X_5) Q14AXX	(X_1)Q55X	.312	-	-	.312
	(X_2)HHRACEX	-.001	-	-	-.001
	(X_3)HHRACESD	.077	-	-	.077
	(X_4)FRONT23X	-.031	-	-	-.031
(X_6)TRNHMPEX	(X_1)Q55X	-.208	-.023	-	-.186
	(X_2)HHRACEX	.110	.000	-	.110
	(X_3)HHRACESD	.117	-.006	-	.123
	(X_4)FRONT23X	-.335	.002	-	-.337
	(X_5)Q14AXX	-.074	-	-	-.074
(X_7)Q16X	(X_1)Q55X	.381	.078	.031	.272
	(X_2)HHRACEX	-.363	.000	-.019	-.344
	(X_3)HHRACESD	.106	.019	-.021	.108
	(X_4)FRONT23X	.211	-.008	.057	.162
	(X_5)Q14AXX	.251	-	.012	.238
	(X_6)TRNHMPBX	-.169	-	-	-.169

Figure 2

Individual-Level Path Model Predicting

Knowledge of Neighborhood Name



Note. All variables are pooled within-block residuals. Q02Z = renter (0) or owner (1); Q18Z = length of residence in neighborhood; Q55Z = education, TRNHMRPZ = near-home responsibility; Q3CZ = proportion of addresses on street where R knows somebody by face or name; SOCNBRZ = distrust in neighbors; Q14AZZ = membership in local organization that others on street also belong to; Q16Z = knowledge of a neighborhood name.

impact on neighborhood identification.

As in the block level model, education has significant direct and indirect (via membership organization) enhancing effects on neighborhood identification. But, neither length of residence nor homeownership have any significant impacts.

Discussion

Our results provide strong evidence that, at the block- and individual-level, local organizational membership enhanced neighborhood identification. These results therefore replicate Hunter's (1974) finding of a similar relationship. But, our results also extend his earlier findings because we observe this relationship at two levels of analysis: the block, and individual (controlling for the block.)

Furthermore, our pattern of results is clearer at the block level (i.e., larger path coefficients are obtained). This suggests that, for this aspect of neighborhood identification, the social construction approach is superior to the cognitive approach. A social construction approach, as exemplified by Suttles (1968, 1972), suggests that areal identification evolves out of social interaction and membership patterns. Therefore, since the block is a social unit, the approach would suggest that results should be clearest at this level.

By contrast, the cognitive approach (Downs and Stea, 1977; Lee, 1970; Rapoport, 1977) would suggest that areal identification evolves out of individual meanings attached to places, and individual-level activity patterns. Thus, this approach would suggest that individual-level results should be clearest.

Our results then provide more support for the social view than the cognitive view. Therefore, future studies of this ilk may do well to examine more closely the interplay of social patterns and areal identification.

CHAPTER 12

THE ROLE OF THE PHYSICAL ENVIRONMENT: EXAMINING LINKAGES WITH INFORMAL SOCIAL CONTROL[1]

Ralph B. Taylor
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Linkages between the physical environment and informal social control can be viewed from several different perspectives. These perspectives range from the deterministic to the possibilistic, and include conceptual frameworks such as architectural determinism, person-environment congruence, and potential vs. effective environment. Although these heuristics have been helpful in examining links between the physical environment and social behavior, each contains certain vagaries and/or assumptions which are problematic. Furthermore, unless investigations are grounded in particular theories, these heuristics do not help the researcher decide what components of the physical environment to investigate. In the present study we turned to human territoriality to narrow our focus on the physical environment. A territorial framework suggests that block-level and site-level features that promote demarcation, and identification, will help increase territorial attitudes and behaviors, which, in turn, will promote informal social control. The method and results of our measurement of block-level physical features are reviewed. Directions for further research are discussed. Cross-level links between site-level and block-level features and processes need to be understood. Also, the domain of behaviors influenced varies across features, and needs to be clarified. The theory of human territoriality does provide a clear focus on features relevant to issues of informal social control.

Introduction

In this chapter we discuss the ways that the physical environment can influence social behaviors related to informal control. Initially, we review various conceptual perspectives on how social behavior and physical environment are linked. The advantages and disadvantages of these particular frameworks are discussed. A central problem is that none of these perspectives help the researcher decide <u>which</u> aspects of the physical environment are important or salient. That is, the researcher needs a specific theoretical perspective to direct his/her investigation of physical environment - social behavior linkages. In the present study our use of human territoriality helps to direct our focus on physical elements. Given a territorial perspective, we note what physical features may be important. We summarize the method and results of the present study as they bear on these linkages. We close with a discussion of important issues which deserve further attention if linkages between social behavior and physical environment, particularly with respect to territorial and defensible spaces issues, are to be clarified.

[1] Some of the issues discussed in this chapter were raised or clarified in conversation with Richard Titus. The authors gratefully acknowledge his input.

Perspectives on Physical Environment-Social Behavior Linkages

Perspectives on linkages between the physical environment and social behavior vary in terms of the power or pre- eminence assigned to the physical environment.[2] At one extreme are deterministic views that the physical environment determines various social behaviors. At the midpoint of the continuum are probabilistic viewpoints, which hold that the environment provides a range of opportunities and restrictions, and that some choices are more probable than others, given a particular physical setting. The third view in which the physical environment is "weakest" is a possibilistic view, according to which the environment just provides opportunities, but does not favor a person taking one choice over another. Choice is largely influenced by other factors such as personality, culture, and goals. Thus, there is considerable variation in the relative salience, or prepotence, assigned to the physical environment. Furthermore, it is probably fair to say that in fields such as sociology, cultural geography, and psychology, the trend in the last 40 to 50 years has been to assign diminishing relative potency to the physical environment. Whether this shift is due to increasing knowledge or a shift in political and intellectual climate, or other factors, is not clear.

Particular Perspectives

Given such a continuum of viewpoints, there are particular heuristics within this range that have been popular, or at least useful. In this section we explore three of these heuristics: architectural determinism, person-environment congruence, and the interpretive approach. The advantages and disadvantages of each framework are noted.

A. Architectural Determinism

Architectural determinism is the view that the physical or man-made environment can determine social behavior (Broady, 1972; Gans, 1968a). Examples of theories and research which espouse this viewpoint, either directly or indirectly, abound. Probably neighborhood unit theory (Perry, 1929; Dahir, 1947) is one of the best known theoretical examples of this view. The neighborhood unit plan suggested that particular arrangements of amenities, residences, and thoroughfares, could promote community (Tannenbaum, 1948). Many new towns in England, and some in this country, were built around this idea. Probably the best known empirical example which substantiates the idea of physical determinism is the work of Festinger, Schachter, and Back (1950) on housing designs, and friendship and group formation. Festinger et al. (1950) suggested that the physical layout of housing and pathways established a particular functional distance, i.e., likelihood of crossing paths, between two people or two households. This functional distance determined the frequency of passive contacts, i.e., the number of times people were likely to bump into each other. Since passive contacts were the first stage in friendship formation, functional distance could be used to predict friends, what group one belonged to, and how information traveled. More recently, Ebbesen, Kjos, and Konecni (1976) have suggested that distance directly determines choice of enemies, because people living closer by are more likely to spoil

[2] This tri-chotomization follows closely that laid down by Rapoport (1977).

your environment with noise, litter, etc.[3] Thus, conceptual and empirical investigations of the residential environment, which rely heavily on the assumptions of architectural determinism, are evident.

There are several advantages of assuming a perspective of architectural determinism. (1) It forces us to acknowledge that behavior always occurs in a particular place. The behavior may be wedded to that place (Proshansky, 1976). In addition, location, through properties such as stimulus control and provision of facilities (Studer, 1970; Skinner, 1957; Titus, 1978), may directly influence behavior. A deterministic perspective doesn't allow us to ignore such facts. (2) In addition, such a deterministic perspective offers a clear solution for solving behavioral problems that may arise. It suggests that if we wish to change the behavior we should change the environment. Such procedures, although potentially costly and disruptive, are at least straightforward. Alternative solutions, such as changing the people, or changing the rules that govern how people interact in a particular setting, are perhaps less straightforward. Thus, in that it forces us to confront certain facts about human behavior, and suggests direct solutions for particular behavioral problems, architectural determinism is a commendable viewpoint.

But, these benefits notwithstanding, there are several disadvantages to architectural determinism. Four of these have recently been recounted by Franck (1979), and we repeat them here. A person embracing a deterministic perspective may go wrong in any of the following ways: (1) He/she may overestimate the impact of the physical environment by overlooking or downplaying other influences on behavior. (2) He/she may assume that the physical environment can have only direct, immediate impacts on behavior, and that indirect effects, mediated by other factors (e.g., culture), cannot occur. (3) He/she may fail to consider that people actively influence physical environments, through such processes as selection of environments, or (4) modification of environments. These points are well taken. Franck (1979) further suggests that researchers and theorists, by carefully considering and avoiding these potential pitfalls, can advance to a more fruitful investigation of the effects of the physical environment on social behavior. We agree. Thus, there are many ways to misconstrue or distort influences of the physical environment, but these potential hazards should not be a deterrent to investigating the role of the physical environment.

B. <u>Person-Environment Congruence</u>

Perhaps more importantly, such potential hazards are more easily avoided if one adopts a different set of assumptions. A potential alternative is a person-environment congruence perspective. A congruence view starts with the Lewinian notion that behavior is a function of both the person and the environment (Stokols, 1977). Thus, coequal attention must be given to personal characteristics and environmental characteristics. Conceptual and empirical examples of this approach are numerous. Instances include: Levin's (1966) finding with three-mode factor analysis that different people respond

[3] In both of these studies, the researchers focused on a socially homogeneous residential environment. This is an important setting condition for their research, and probably constitutes an important limitation on their findings.

variously to certain types of anxiety-arousing situations; Stokols, Stokols, Novaco and Campbell's (1978) finding that Type A and Type B personalities respond differently to particular commuting distances; and Verbrugge and Taylor's (1980) finding that responses to household density were different for people with varying levels of perceived control. Thus, research in this interactionist perspective has revealed that effects of particular environmental characteristics are conditioned by personality characteristics.

Perhaps the most important advantage of a congruence viewpoint is that it mandates a co-equal status between persons and their environment. Neither is assumed to overpower the other. Thus, the danger of overestimating the influence of the physical environment is considerably reduced.

Nevertheless, several problems are inherent in the interactionist framework. (1) As Buss (1977) has pointed out, interactionism can mean a lot of different things. For example, if there is an interaction between a particular environmental characteristic, such as density, and a particular personality characteristic, this could mean different things. It could mean that a certain negative effect of density applies more forcefully to some persons than to others. Or, it could mean that the effects of density are <u>wholly</u> different for different kinds of people: some respond positively while, at the same time, others respond negatively. Researchers and theorists often are not clear about which meaning they are applying to the term interactionism. (2) In addition, there is always the danger with the interactionist perspective that the researcher will pay more attention to people than to the environment. He/she may give more care to reliably measuring particular intrapersonal characteristics, than to measuring environmental variables. For example, Weinstein (1978) found that the negative impact of dormitory noise varied across persons, and developed a scale to differentiate which people were more sensitive to noise than others. The particular qualities of noise that were bothersome, however, received no attention at all. (3) Finally, oftentimes the reasons or processes responsible for a differential response across persons to particular environmental stimuli are not clear. Usually such reasons are inferred given the nature of the personality characteristic assessed (e.g., Stokols <u>et al</u>., 1978). Thus, we can see that the interactionist perspective also has its own limitations.

C. <u>The Interpretive Perspective</u>

Potentially, the problem of why people respond differentially to various environmental qualities can be solved by an interpretive perspective. What we are calling an interpretive perspective is a blend of several different theoretical streams, some recent, some less recent. Rapoport (1977, pp. 38-47) has suggested that the environment is perceived via various social and cultural filters, resulting in perceived alternatives, which are a subset of the actual alternatives. Gans (1968, pp. 4-11) has suggested that the effective environment mediates the linkage between the physical or potential environment, and the behavior of users. "The effective environment may thus be defined as that version of the potential environment that is manifestly or latently adopted by users." (Gans, 1968, p. 6). He also suggests that, by and large, the effective environment has primacy over the potential environment. And, in a somewhat more symbolic vein, Appleyard (1973) has suggested that behavior in urban spaces is influenced by inferential urban perceptions, or, reading of "signs" in the urban landscape (Brower, 1965). Finally, more recently Stokols and Shumaker (1980) have suggested that how groups of persons behave in particular places depends on the shared meanings or definitions that they apply to various locations. Although these various theoretical streams are quite diverse, they share two important assumptions: (1) people (individually and as groups) interpret the physical environment; and (2) these interpretations are a critical determinant of the linkages between the physical environment and social behaviors. It is these two assumptions that are at the core of an interpretive perspective.

An interpretive perspective boasts several advantages. Perhaps most importantly, use of this perspective may help unlock why particular people respond in particular ways to the physical environment. Thus, it may be possible to advance from describing person-environment linkages to explaining these connections, thereby deepening our understanding. In addition, a focus on interpretation demands that the researcher or theorist or designer be sensitive to the users' point of view. All too often this sensibility is lacking (cf. Sommer, 1972). Empathy with the user or resident is a likely by-product. Finally, this focus attends to the important fact that people do develop rules or guidelines about how to act in particular places (Price and Bouffard, 1974; Wicker, 1979), and these guidelines are critical. Thus, in general, the interpretive perspective may foster sensitivity to the way people think and act in the physical environment.

Of course, there are disadvantages to such a viewpoint. With the interpretive perspective there's always the danger of losing sight of the role played by the physical environment. It's sometimes more attractive to focus on deciphering the filtering mechanisms than it is to focus on the environmental features being filtered. In addition, the interpretive framework involves the researcher making a conscious effort to find out what people are thinking. This is an activity quite foreign to some researchers. In Kelly's (1955) terms, constructs or dimensions describing the environment must be elicited rather than supplied. Nonetheless, these limitations notwithstanding, the interpretive framework has great potential for better explaining particular links between the physical environment and social behavior.

D. Pros and Cons of the Three Perspectives

Each of the three perspectives discussed above has advantages and disadvantages; we don't think one is necessarily better than the other. We do think, however, that each perspective probably applies best to particular problems or areas. Again, to use Kelly's (1955) term, each perspective has its focus of convenience. Architectural determinism is probably at its best when applied to very powerful environmental influences, such as crowding in prisons, and excessive heat (cf. the literature on temperature and urban riots; Baron and Ransberger, 1978). It may also work well with very straightforward environmental influences, such as effects of street light illumination on ability to identify passers-by, or the effects of high fences on deliberate intrusions. An interactionist perspective may be most useful for understanding impacts of moderate-level stressors, such as the "daily hassles" discussed by Lazarus and Cohen (1977). An interpretive perspective may best apply to environmental elements whose influence is heavily dependent on social or cultural learning, such as territorial markers. Thus, each heuristic has its own strengths, and the researcher should choose his/her viewpoint based upon the type of influences investigated.

Nonetheless, the virtues of each framework aside, there is a common fault shared by all of them. To wit, none of these approaches tells the investigator which are the important features in the physical environment. The researcher still has to decide upon, and measure, particular elements in the physical environment. Without such a focus, the investigator may try to measure all of the physical environment. This is not an advisable approach, because one is quickly overwhelmed. It is also not advisable because elements cluster in the physical environment and this covariation may obscure the influence of particular elements. For example, suppose one was investigating the relationship between physical elements on blocks and crime. A catch-all researcher might start measuring things like block length, street width, setback, housing height, housing density, amount of open space, presence of amenities, etc. And, he may find that both block length and block population are related crime. Unfortunately, he/she is not able to precisely determine the influence of each since they are strongly interconnected. If, however, he/she had started with theories of density and group size, he/she might have stratified the sample appropriately so that the separate influences of block length and block population could be examined. Thus, there are many dangers awaiting one who begins measuring the physical environment without a particular theoretical orientation. And, such an orientation is not provided by the heuristics discussed above.

The Utility of a Territorial Orientation

Our approach to resident-based control draws on the theory of human territoriality. A full discussion of how territoriality informs the investigation of resident-based control appears in Chapter 4, where we reviewed our revised defensible space model. In this section we discuss how human territoriality helps focus attention on particular features in the physical environment.

Territoriality is concerned with control over bounded spaces, who has access to them, and what activities occur in them. Thus, elements will support territoriality if they: enhance boundaries, or make them more salient; help residents better distinguish between insiders and outsiders; support or facilitate residents' policing and/or surveillance functions; and indicate to outsiders that residents care about and watch over their space. This last function relies on features that are resident based, while the other features may include permanent or fixed features in the environment.

Given such functions, the relevant elements may be as follows: for boundary enhancement, real and symbolic barriers; for inside/outside distinction, elements that reduce pedestrian or traffic volume; and for policing functions, surveillance opportunities. All manner of territorial markers (flowers, decorations, upkeep) may tell outsiders that residents care (see Chapter 10).

Furthermore, it is important to be clear that these features may be relevant at both the block and site or parcel level. In the next sections we discuss our approach to measuring features at each level.

E. Block-Level Features

Our protocol for measuring physical features at the block level appears in Appendix A. At block level we focused on three types of physical elements: (1) those that enhanced block singularity or individuality; (2) those that reflected real or symbolic barriers; and (3) those that reflected residents' care. With this checklist raters were able to reliably code up the study blocks.

The principal components analysis yielded three dimensions which corresponded fairly clearly with the hypothesized territorial functions. Component I described boundaries and barriers at the rear of houses, between the property and the alley. Blocks with high scores on this dimension would have: boundaries and fences between the property and alley, and the fences would not permit surveillance; clear separations between back yards; and dogs in backyards. Component II describes barriers or boundaries in the front of the block, between the property and the sidewalk. Blocks with high scores on this dimension would have: clear boundaries, planting, and non-surveillance-permitting fences between the property and sidewalk; and clear boundaries between front yards. Component III describes block singularity or lack thereof. This component also suggests that block singularity is associated with better upkeep of houses, and more conformity in appearance of houses. Thus, it suggests that there may be a linkage between fixed, block-level features, and the variable features of individual houses on the block. Fixed features and resident-based territorial markers may thus be somewhat interconnected. Blocks with low scores on this dimension (i.e., high on singularity) would be: dead-end streets, with clear boundaries at the ends of the block; be different from surrounding streets; have low-pole or no street lighting; and have houses which are similar in appearance, well kept up, and without burglar bars on the windows.

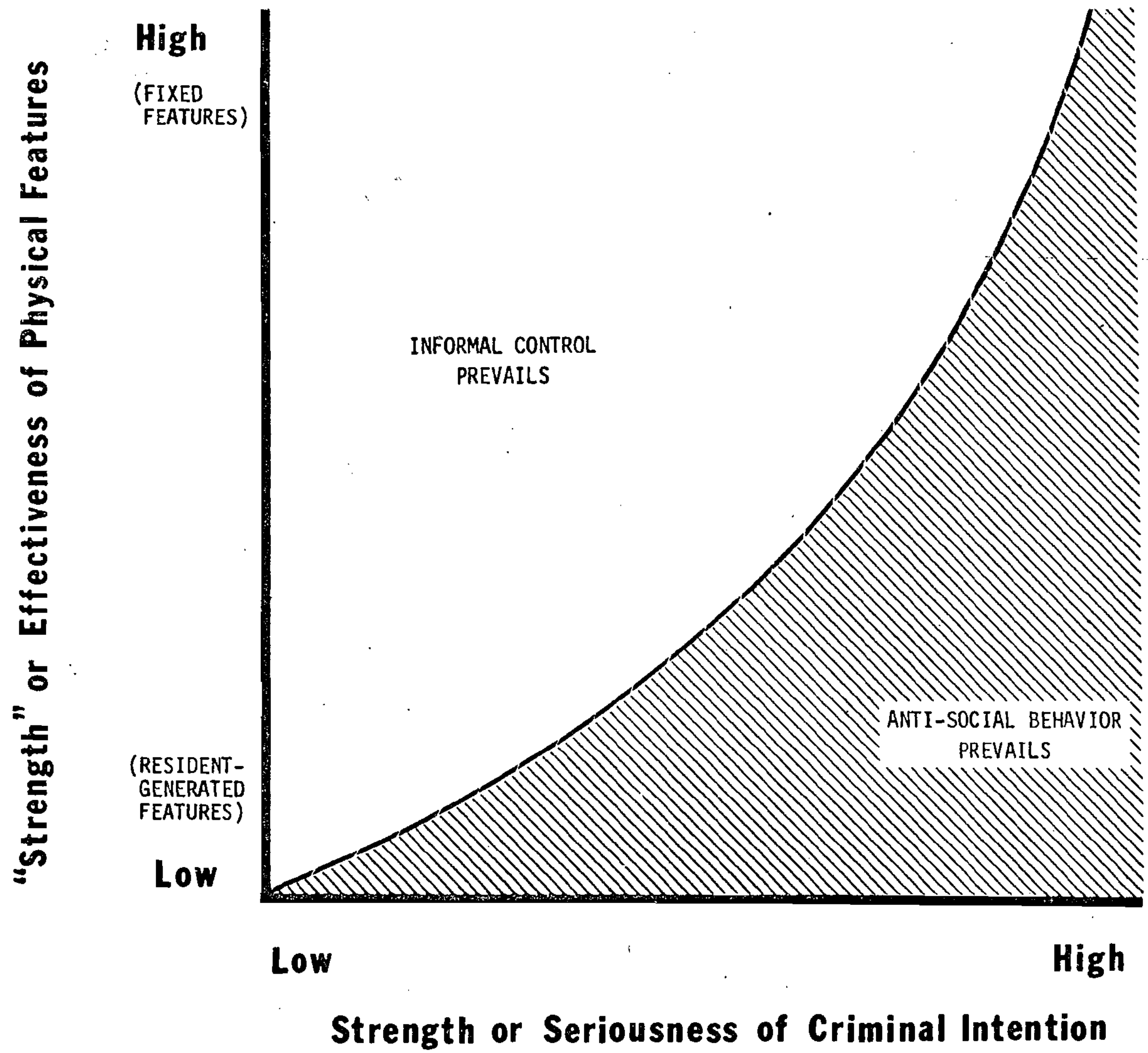
Of course, one may raise the objection that we could have or should have measured more physical elements, relevant to defensible space and territoriality, at the block level. Nonetheless, we did measure enough features to reveal the important underlying dimensions of real and symbolic barriers, and singularity. We expect the latter may promote insider/outsider distinctions. (For example, a dead-end street in a sense requires a passer-by to be clear about where he is going and why. A person just doesn't walk through a dead-end street.) Thus, from a territorial perspective we have adequately measured the most important underlying dimensions. In addition, we feel that some defensible space constructs (dangerous areas in proximity to safe ones) are much less appropriate in the standard housing environment than in the housing project environment.

In sum, we focused on physical elements at the block level which are relevant to territorial functions. Our measurement tapped dimensions of real and symbolic barriers in front and in back; and block-level singularity and upkeep. The latter factor suggested a linkage between fixed-features and resident-generated features.

F. Site-Level Physical Features

Our measurement of site-level features was described in Chapter 10. At the site level we measured three dimensions relevant to the defensible space

FIGURE 1


High
(FIXED FEATURES)
(RESIDENT-GENERATED FEATURES)
Low
"Strength" or Effectiveness of Physical Features
INFORMAL CONTROL PREVAILS
ANTI-SOCIAL BEHAVIOR PREVAILS
Low
High
Strength or Seriousness of Criminal Intention

interpretation of territoriality: surveillance opportunities, real barriers, and symbolic barriers. We also measured resident-generated signs of appropriation, which are as important as territorial markers. Finally, we measured signs of incivility, or physical deterioration. In a way the latter are the inverse of territorial markers. Signs of incivility indicate that people don't care.

An important point is that at the site-level the physical features present are a complex mix of fixed or permanent features, and semi-fixed or resident-generated features. The fixed features may be important in and of themselves. For example, surveillance opportunities are assumed to directly facilitate surveillance and therefore informal control. (This assumption, as we discuss below, is in some senses problematic.) The fixed features may also be important as a facilitator for resident-generated features. For example, a fence in back may encourage a person to engage in gardening or planting. And, some fixed features may be directly important for informal social control, and at the same time be indirectly important for facilitating resident-generated features. For example, a clearly defined space in front may allow residents to sit out and keep an eye on things; at the same time it may encourage things like gardening. Thus, at the site level there may exist some complex interconnections between sets of physical features. Particular features may influence informal social control in more than one way; they may be multipurpose.

Furthermore, physical features at the site level are differentially relevant across control-related outcomes. We saw earlier in the abstract picture task that the fence was most powerful in deterring some kinds of intrusions. This is important and suggests that particular physical elements are most relevant to particular outcomes.

One way to conceptualize this differential salience appears in Figure 1. The notion presented here is that "soft" resident-generated features will deter weak criminal intentions, but not strong ones. For the latter, fixed features are effective deterrents. And, of course, criminals with very strong intentions won't be deterred by anything. Of course, this depiction is probably oversimplistic in several respects. We know, for example, that criminal intentions are complex, and probably multidimensional. Nonetheless, such a framework may provide a useful framework to begin to conceptualize links between types of features and types of control-related outcomes.

Also, the point not to be lost here with our focus on antisocial behaviors, is that resident-generated features carry multiple messages or cues, to people besides potential offenders. Thus, the utility of a physical feature must be determined only after assessing all of its roles or functions.

Finally, before we leave site-level features we hasten to point out that even fixed features, assumed to have direct effects, may not always function as envisioned. For example, in the present study we found that more surveillance opportunities were associated modestly with higher levels of police activity. The anticipation (cf. Newman, 1972) is that with more surveillance opportunities people would be more likely to keep an eye on things, and keep things in hand. Apparently, people are seeing things, and then calling the police. Thus even fixed features may not influence behavior in the expected fashion.

G. Sites within Blocks

Particular sites are set within particular blocks. Physical features at the block level provide the setting condition for physical features at the site level. For example, on a tree-lined street most sites are likely to be low on surveillance opportunities. In addition, the block context are interpreted. For example, if there are flowers in front of most houses on a block, then the barren ones appear deviant. If there are few houses with flora on the block, then the gardeners appear deviant. Thus, in several ways, physical features at the block and site level may be intertwined.

Conclusion

Various perspectives can be adopted in investigations of the physical environment and social behavior. Each of these perspectives has certain disadvantages, and none of them delimit what features in the physical environment are important. Theories of human territoriality were useful in identifying block-level and site-level physical features relevant to informal social control. Particular features may be most effective for particular types of outcomes. Directions for future research include:

- pinning down the scope of effectiveness for particular physical features, and the reasons for this scope;

- clarifying linkages between block-level physical features and site-level physical features;

- exploring the usefulness of a distinction between resident-generated physical features and fixed physical features; and

- more fully investigating the assumptions about how fixed features in the environment actually influence behavior.

Appendix A

NGHD ____________ Block ____________

Revised DSC: Block Level Assessment

WHOLE STREET QUESTIONS

Q1. Street Layout (1 = dead end/cul-de-sac; 2 = through street) ____

Q2. Lanes of moving traffic permitted (range acceptable) ____

Q3. Lane markers on street: yellow or intermittent white (1 = yes, 2 = no) ____

Q4. Street width different from surrounding (1 = yes; 2 = no) IF YES, go to Q5. ____

Q5. Wider (1) or narrower (2)? (8 = INAP) ____

Q6. Street different from surrounding streets because of buildings? (1 = yes on one or both sides; 2 = no) ____

Q7. Street and/or sidewalk, due to materials, configuration, or width, different from surrounding streets? (1 = yes; 2 = no) ____

Q8. Clear boundaries at ends of street? (1 = yes; 2 = no) ____

Q9. Type of lighting (2 = high pole for traffic; 1 = low pole/pedest; 0 = none) ____

EACH SIDE OF STREET QUESTIONS

	ODD FRONT	EVEN FRONT
Q10. Porches and peaks same color (5 = all or almost all; 4 = many; 3 = about half; 2 = a few; 1 = none or almost none; 8 = INAP)	____	____
Q11. Houses have improvements to building which are similar (5 - 1)	____	____
Q12. Houses are generally similar in terms of appearance of fronts and front yard? (5 - 1)	____	____
Q13. Houses are well kept-up; no bad paint, broken windows, etc? (5 - 1)	____	____
Q14. Houses have burglar bars or metal gratings on any front windows? (5 - 1)	____	____
Q15. Houses have window displays directed toward the outside? (5 - 1)	____	____
Q16. Houses have ornaments on house or in front yard? (5 - 1)	____	____

(Q17 - Q21: INAP (Code 8) IF HOUSES FRONT DIRECTLY ONTO STREET, WITH NO FRONT YARD OR PROPERTY, WRITE YES IF ½ HOUSES SHOW FEATURE)

	ODD FRONT	EVEN FRONT
Q17. Boundary or barrier where sidewalk meets front yard (1 = yes; 2 = no)	____	____
Q18. Front yards are clearly separated from each other (1 = yes; 2 = no)	____	____
Q19. Bush or hedge type-planting between sidewalk and property (1 = yes; 2 = no)	____	____
Q20. Some type of fence between property and sidewalk (1 = yes; 2 = no)	____	____
Q21. Do fences permit surveillance? (1 = yes; 2 = no)	____	____

BACK QUESTIONS

	ALLEY BEHIND ODD-NUMBERED SIDE OF STREET	ALLEY BEHIND EVEN-NUMBERED SIDE OF STREET
Q23. Boundary or barrier where alley meets back yard (1 = yes; 2 = no)	____	____
Q24. Back yards clearly separated (1 = yes; 2 = no)	____	____
Q25. Some type of bush or hedge planting separating alley from property (1 = yes; 2 = no)	____	____
Q26. Some type of fence (1 = yes; 2 = no). IF YES, GO TO Q27. IF NO, GO TO Q28.	____	____
Q27. Fences permit surveillance (1 = yes; 2 = no)	____	____
Q28. One or more dogs in back yards (1 = yes; 2 = no)	____	____

FRONT AND BACK QUESTIONS

	ODD FRONT	EVEN FRONT	ODD ALLEY	EVEN ALLEY
Q29. How much litter is there? (5 = none at all, almost spotless; 4 = there are just a couple of bits of litter in a few places; 3 = there are several bits of litter, noticeable in several yards; 2 = lots of litter, heaps or clumps of it; 1 = wall-to-wall litter)	____	____	____	____
Q30. Surveillance of shared spaces, from the houses which adjoin, is largely unobscured; i.e., few big trees, bushes, garages, blank walls, etc. (1 = yes; 2 = no)	____	____	____	____
Q31. There are signs in the shared spaces other than public parks, indicating one of them used as play areas (1 = yes; 2 = no)	____	____	____	____
Q32. There are signs in the shared spaces that reflect concerted efforts and/or activities of block residents (1 = yes; 2 = no)	____	____	____	____
Note: Are most of the walks shoveled? (1 = yes; 2 = no)	____	____		

Table A-1

Principal Components Analysis of

Block-Level Defensible Space Features

Variable	I	II	III	h^2
Q1 Street Layout	-.03	-.06	.84	.71
Q2 MIN	.10	.28	.30	.18
Q2 MAX	.31	.03	.10	.10
Q3	-.43	-.19	-.44	.42
Q6	.13	-.25	-.05	.08
Q7 Street Different From Surrounding Ones	.03	-.26	.66	.50
Q8 Clear Boundaries at Ends of Street	.11	-.30	.74	.66
Q9 Type of Lighting	.09	.13	.54	.32
Q12A Houses Similar in Appearance	-.24	-.26	-.59	.48
Q12B Houses Similar in Appearance	-.42	-.31	-.49	.52
Q13A Houses Well Kept Up	.19	-.11	-.58	.38
Q13B Houses Well Kept Up	-.02	-.06	-.44	.20
Q14A Houses Have Burglar Bars	-.04	.28	.59	.42
Q14B Houses Have Burglar Bars	-.08	.34	.59	.47
Q15A Houses Have Window Displays	.57	.13	-.31	.43
Q15B	.08	.19	-.19	.08
Q16A	.15	.03	.12	.04
Q16B	-.14	.07	.27	.10
Q17A Boundary Between Walk & Yard	.08	.63	.14	.42
Q17B Boundary Between Walk & Yard	.14	.73	.26	.63
Q18A Front Yards Clearly Separated	-.12	.64	.21	.47

Table A-1

(continued)

Variable	I	II	III	h^2
Q18B Front Yards Clearly Separated	.17	.73	.18	.59
Q19A Bush or Planting Between Walk and Yard	-.06	.51	-.07	.26
Q19B Bush or Planting Between Walk and Yard	.04	.66	-.07	.44
Q20A Fence Between Property & Walk	.08	.79	-.04	.63
Q20B Fence Between Property & Walk	.16	.80	.00	.66
Q21A Fences Permit Surveillance	-.31	.67	.18	.58
Q21B Fences Permit Surveillance	-.23	.70	.21	.59
Q23B Boundary Where Alley Meets Yard	.99	-.03	-.06	.99
Q24A Back Yards Clearly Separated	.67	-.44	.09	.66
Q24B Back Yards Clearly Separated	.94	.04	-.09	.89
Q25A	-.02	-.03	-.18	.03
Q26A Fence Between Property & Alley	.55	-.27	.21	.42
Q26B Fence Between Property & Alley	.95	.03	-.07	.91
Q27B Fences Permit Surveillance	.95	.03	-.07	.91
Q28A	.29	-.05	.16	.11
Q28B One or more dogs in backyards	.66	.03	-.36	.57
Lambda	6.57	6.19	4.10	
Variance Explained	17.8%	16.7%	11.1%	

CHAPTER 13

Perceived Homogeneity and Objective Homogeneity

Ralph B. Taylor

Objective homogeneity and heterogeneity are elements of social life whose virtues and vices have been long contested by planners and sociologists. A review of this debate suggests that each is neither good nor bad, and that moderate homogeneity may enhance local social life. At the same time, however, the relationship between similarity, which from a psychological perspective appears to underpin a smoothly functioning social climate, and objective homogeneity, is as yet unclear. In the present chapter Survey I data is used to explore this relationship, and to investigate the correlates of both perceived similarity and objective homogeneity. Results reveal only a loose linkage between perceived and actual homogeneity. Perceived and actual homogeneity share, however, a coupling with local social ties. And actual homogeneity demonstrates a dampening effect on crime-related outcomes. At the individual level, as perceived homogeneity increases, perceived level of neighborhood problems decreases. We suggest that both actual and perceived homogeneity may facilitate informal social control. The former form of similarity may operate via shared understandings and patterns of use, thereby influencing actual behaviors. The process by which the latter operates is unclear. It is clear, however, that the determinants of perceived similarity are in need of considerable clarification.

Introduction

In this chapter we address the consequences of perceived and actual homogeneity, the interrelationship between the two, and the determinants of perceived similarity. The importance of objective homogeneity, in residential life as well as elsewhere, is highlighted by a review of planning and sociological research. The importance of perceived similarity is revealed in psychological theorizing and research. The resident-based model of informal control which we have developed suggests that both objective and perceived similarity may play a role. We examine the results from our Survey I data as they bear on this issue, and close with some suggestions for further research.

Objective Homogeneity and Heterogeneity:

The Planning and Sociological Tradition

A. Virtue and Vices: Objective Homogeneity and Heterogeneity

Both homogeneity and heterogeneity have been extolled and vilified by residential planners and sociologists. This issue received considerable attention in the 50s and 60s. Homogeneity or lack of diversity was disparaged on several counts. People feared that homogenization was occurring in suburban communities, and that consequently a monochromatic culture peopled by conformists would emerge (Gans, 1968, Ch.11). It turned out, however, that many suburban communities were quite heterogeneous, and, in fact, more heterogeneous than many of the urban neighborhoods from which residents had come (Gans, 1967).

Furthermore, in general, critics have suggested that homogeneity is bad and heterogeneity is good because the latter fosters tolerance and enrichment (Mumford, 1956; Isascs, 1948; Gans, 1968; Ch.13). Thus, they advocated an integrated or balanced community, and deplored homogeneous enclaves.

Nonetheless, heterogeneity or diversity has its own drawbacks. Rosenberg (1972, 1975) has found that adolescents living in a dissonant context (i.e., heterogeneous, and they are in the minority) had lower self-esteem, and less stable self-concepts, than adolescents living in a homogeneous or consonant context. This deleterious effect of a heterogeneous concept is probably related to the individual's inability to develop an adequate reference group with which he/she can identify.

Although, as Rosenberg's work demonstrates, heterogeneity may have negative effects, it can also be overcome. For example, Gans (1967) observed that residents living on heterogeneous blocks where it was difficult to find like-minded people, would seek similar others in neighborhood-level organizations and meetings. Thus, they were able to "leapfrog" beyond the immediate heterogeneity, and thus avoid a negative impact on their social life.

On balance, Gans (1968, Ch.13) has suggested that moderate homogeneity at the block level is desirable, because this may help promote social contacts and the development of local ties. He also pointed out that the type of homogeneity necessary to promote social life may depend upon the particular people getting together, and on the nature of the activity. Gans also recommends heterogeneity at the community level, inasmuch as homogeneity at this level is likely to promote areal inequities.

B. <u>A Stumbling Block</u>

Thus, on balance, moderate homogeneity is recommended at the block level as a facilitator of local social interactions. Unfortunately, however, planners and others don't yet know what <u>specific characteristics</u> result in a homogeneous block; i.e., the specific elements that would result in this ambience are unclear. Gans (1968, Ch.12, p.156) notes "Little is known about what characteristics must be shared before people feel themselves to be compatible with others. We do not know for certain if they must have common backgrounds, or similar interests, or shared values, or combinations of these. Social relationships are based, not on census data, but on subjectively experienced definitions of homogeneity and heterogeneity which terminate in judgements of compatibility or incompatibility." Thus, it is not clear how homogeneity can be planned for or implemented.

<u>Virtues: Perceived Homogeneity</u>

Turning to the psychological tradition and the issue of perceived homogeneity or similarity, we enter far calmer waters. All here agree that perceived homogeneity is good or helpful on several counts. No one has unearthed any problems concomitant with perceived similarity.

Perceiving that others are like us supports our own psychological systems. Festinger (1954) in his theory of social comparison suggested that our own opinions are buttressed when others agree with us, and that we actively seek out people with comparable opinions. This consensual validation strengthens our own beliefs and reduces doubts. Thus, literally, we feel better when others agree with us.

Furthermore, perceiving others as similar to us is associated with a variety of positive feelings such as liking (Bersheid & Walster, 1978). Our judgment that others are like us, and our positive affect towards those persons, are bound up in a system-like process of mutual influence (Homans, 1950; Heider, 1958), and it is difficult to determine which came first. Newcomb (1963) suggests that both perceived similarity and liking are a function of actual attitudinal similarity. Thus, affect, actual attitudinal similarity, and the judgement of similarity appear indissolubly intertwined.

Homogeneity and Resident-Based Control

The model of resident-based informal control which we have been discussing in the present report suggests that homogeneity, both objective and subjective, may be important on several counts. Objective similarity may be associated with consensus about how to act and behave in outdoor spaces, how to take care of property, how to beautify property, and how and what messages to send to potential intruders. As objective homogeneity increases so too may consensus on how to behave in, decorate, and take care of outdoor spaces. In turn, this greater consensus may result in lower levels of problems, or lower levels of police activity.

Perceived homogeneity may also be important for resident-based control, but for slightly different reasons. As perceived similarity increases it is likely that local ties are also increasing. As these ties strengthen so too should informal control, and territorial attitudes. Thus, in turn, problems should be dampened.

Results

In this section we explore the correlates of perceived similarity at the individual level, and the correlates of actual and perceived homogeneity at the block level. We use Survey I data.

A. Perceived Homogeneity: Individual-Level Correlates

Numerous correlates of individual-level perceived similarity emerged. With regard to demographics, as perceived similarity increased: length of residence increased, the respondent was more likely to be a homeowner, age increased, and education decreased. With regard to social variables, as perceived similarity increased: the ratio of friends/acquaintances on the block increased, the respondent was likely to have more friends living in the neighborhood, to belong to a local organization along with coresidents, and to know more people on the street. All of these correlations were significant ($r > .09$), but modest ($< .30$).

Perhaps more interesting was the fact that overall perceived similarity correlated only modestly with questions about similarity on age, religion, income, and education dimensions. With regard to actual helping between neighbors, as perceived similarity increased, respondents were more likely to watch or take care of a neighbor's property when the owner was away ($p < .05$). Thus, individual-level perceived similarity is clearly tied in with demographic and social aspects of the local residential environment.

Similarity was also linked with crime-related outcomes. As perceived similarity increased: level of perceived neighborhood problems decreased, perceived frequency of burglaries on the street decreased, and the neighborhood was seen as safer, ($ps < .05$). Thus, we saw a well-patterned linkage whereby perception of local crime and local problems, and perceived similarity, are related. Again, these correlations were significant but modest.

B. Perceived Homogeneity: Block-level Correlates

At the block level, perceived homogeneity operated in a slightly different fashion. An increasing block mean on perceived similarity was associated with a higher class block and a block where residents were more likely to belong to a local organization. In contrast to the individual-level, however, at the block level perceived similarity increased as the perceived frequency of burglaries on the street increases. Also, at the block level, perceived similarity varied inversely with crimes against property in private spaces, as measured by the calls for service data. In short, at the block level perceived similarity was somewhat bivalent -- heightening perception of some problems, but decreaseing at least one category of police activity.

C. Objective Homogeneity

The effects of objective homogeneity at the block level were investigated in the following fashion. A principal components analysis of our demographic variables suggested the following five factors: age and length of residence, education and prestige of employment, income, household size, and marital status (Taylor, Gottfredson, Brower, Drain, and Dockett, 1980). For each block we determined the standard deviation on each of these factors. Thus, as the standard deviation increased, heterogeneity increased, or, homogeneity decreased. As the standard deviation decreased, homogeneity increased, or, heterogeneity decreased. In some cases these block-level standard deviations were modestly but not significantly correlated with the block-level means: more diverse blocks in terms of employment prestige were likely to be of lower prestige ($r = -.25$), and more diverse blocks in terms of income were likely to be of lower income ($r = -.30$). Thus, it is via these block-level standard deviations that we assessed homogeneity and heterogeneity.

Results indicated that, in several ways, objective homogeneity facilitated the development of local social ties. On more homogeneous blocks, in terms of marital status, residents chatted more frequently ($p < .05$). On blocks that were more homogeneous in terms of family size (i.e., presence of children), the residents were more likely to watch property for neighbors ($p < .05$). On blocks that were more homogeneous in terms of income and prestige of employment, residents were more likely to belong to a local organization along with co-residents ($ps<.05$). Thus, different components of homogeneity had an influence on different elements of on-block interaction patterns. These patterns are uniform, however, in that homogeneity consistently enhanced local ties.

Block level homogeneity also influenced various crime-related outcomes. On blocks that were more homogeneous, in terms of length of residence, fear levels were lower ($p<.05$), and people were less likely to have changed their activities due to fear of crime ($p <.05$). Blocks that were more homogeneous in terms of income were also blocks where fear was lower ($p \leq .05$).

With regard to police activity, calls for service about social nuisances were lower on blocks that were more homogenous with respect to prestige of employment ($p <.05$). Thus, components of homogeneity were linked to psychological as well as behavioral crime-related outcomes, and, the linkages consistently suggested that homogeneity facilitates resident-based control.

In sum then, it was apparent that objective homogeneity, at the block level, was a consistent facilitator of social ties, as well as a dampener of crime-related outcomes. What is not clear is why particular components of homogeneity were linked to particular outcomes.

D. Objective and Perceived Homogeneity

To assess the relationship between objective homogeneity and perceived homogeneity we correlated block-level standard deviations on demographic factors with block-level means on perceived similarity. Although the correlations were in the correct direction, none approached significance. The largest correlations were of perceived similarity with prestige ($r = -.23$) and marital status ($r = -.24$) diversity. What is apparent then is that perceived homogeneity is not a clear reflection of objective homogeneity, at least when the latter is assessed in terms of demographics.

Discussion

Our assessment of the issue of homogeneity has been heartening in several respects. We are uplifted by the fact that both individual-level perceived homogeneity, and block-level objective homogeneity, operate in accordance with the specifications of our model of resident-based control, i.e., they are associated with stronger local ties and with lower levels of crime-related outcomes. The element of local networks most strongly tied to homogeneity appears to be belonging to a local organization along with co-residents. Given that people who share organizational membership share common goals and aspirations, it is not overly surprising that demographic homogeneity leads into this kind of common pursuit. Perceived similarity may result since, in the course of this shared activity, attitudinal similarity may surface. The relevant attitudes are probably feelings about the local area, and what can or should be done about various local problems (cf. Hunter, 1975). The dampening effects of homogeneity on crime-related outcomes are also encouraging, although the mechanics of this process are somewhat nebulous. Our model would suggest that these effects are transmitted, in part, via territorial attitudes, territorial behaviors, and local social ties. This multi-channel path of influence is clearly deserving of further research.

On a less bright note, our results do not yield a clear congruence between objective homogeneity and overall perceived similarity. Clearly then, as Gans has already suggested, people don't make judgments about homogeneity based on census data. What then is the basis? Our best guess at this point is that people make inferences about the extent to which their co-residents share their values, and subsequently use this information. For example, in the pretest of Survey I we included an item about similarity with regard to ethnic origin. The question yielded some very strange answers, and we took to asking respondents what the question brought to mind. One respondent said that to her the question meant "ethical origin," that is, whether or not people had good values. Unfortunately, we were unable to devise a trouble-free way to ask this very important question.

Looking ahead then, there are several critical issues to be pursued. First, what are the determinants of perceived homogeneity? In order to understand how social climates evolve and influence residential life, this question must be pursued. Second, what components of objective homogeneity are important for what types of outcomes? Our broad array of demographics tapped several dimensions, and our results yielded linkages of particular dimensions with particular outcomes. In general, class, income, and presence or absence of children appeared to be the strongest demographic predictors, but other dimensions exerted influence as well. The patterning of these influences deserves further attention.

CHAPTER 14

TOWARDS A MORE GENERAL UNDERSTANDING OF RESIDENT-BASED CONTROL: A TERRITORIAL STEP HEURISTIC[1]

Sidney Brower
Ralph B. Taylor

A territorial step heuristic is developed to explain various types of territorial functioning that were uncovered in the course of the study. This heuristic makes the following suggestions. An individual's daily rounds place him/her in a variety of settings, some of which are more important or central to his/her life (e.g., porch, living room), and some of which are less important or central (e.g., store, street in another neighborhood). Across this continuum of settings, people seek a congruent inverse relationship between territorial control, and potential threat. A lack of congruence emerges if, in a particular setting, less control than is desired, or more threat than is desired, is experienced. If such disequilibrium emerges, three alternative and exclusive strategies may be adopted: (1) he/she may seek to expand his/her control, (2) he/she may erect barriers between settings, or (3) he/she may retreat, and cede control over the disputed setting. Each strategy entails certain costs. This general heuristic is supported by data from the present study, and from other studies. The heuristic is general enough such that it may be of considerable use in integrating prior diverse findings, and in directing future research. The examination of control and threat across a continuum of settings may facilitate more powerful analyses of questions about resident-based informal control.

Introduction

In the course of the present investigation we encountered many different types of responses to threat, and many different modes of asserting resident-based control.

For example, there were instances of blocks which, although identified by local leaders and the police as "good" blocks, were perceived by their own residents as having a higher-than-average level of problems, while some blocks identified as "bad" were perceived by residents to be relatively problem free. There were also instances where two blocks received comparable "problem" and "fear" ratings, but where one block looked cared for and tidy while the other looked completely neglected.

Although these idiosyncrasies did not overwhelm or "wash out" the general model that we were seeking to test, we did, and do, find these aberrations interesting. The question that we asked ourselves was whether or not all these various responses were tied together. Did they represent manifestations of the same underlying system? Guided by our faith in parsimony we then sought to etch out a single conceptual framework that might embrace these various processes. The present chapter describes such a heuristic.

[1] The authors are indebted to David Haines and Amos Rapoport for helpful suggestions concerning some of the ideas presented in this chapter.

We hasten to add that this heuristic is blatantly post-hoc, and thus should in no way be construed as hypotheses which we sought to test in the course of the present effort. Rather, the heuristic may be useful to aid in the interpretation of past effort. Rather, the heuristic may be useful to aid in the interpretation of past results, and, perhaps more importantly, as a guiding framework for future research on resident-based control. To facilitate the latter we constructed several hypotheses, based on our framework, at the end of the chapter. Thus, our heuristic is not something we sought to test in the present research, but rather something that evolved out of it.

The General Model: The Ideal Distribution of Territorial Claims

Figure 1 demonstrates an ideal distribution of territorial claims. A range of settings used on a daily or weekly basis, is suggested. The settings vary from those that are highly central to the person's life (like the home), to those that are not at all central (like a street in a distant neighborhood). In more central settings there is less tolerance for unpredictable, unwanted, or dangerous behavior. That is, more central spaces are more sensitive to potential threat. In these spaces, occupants are more exacting in their needs for gate-keeping and dominance. Thus, occupants seek to exert more territorial control, i.e., control over who has access to the space, and what behaviors actually go on there. And, of course, to the extent that the occupant is effective in the attempt to increase territorial control over the setting, the potential threat in that setting decreases accordingly.

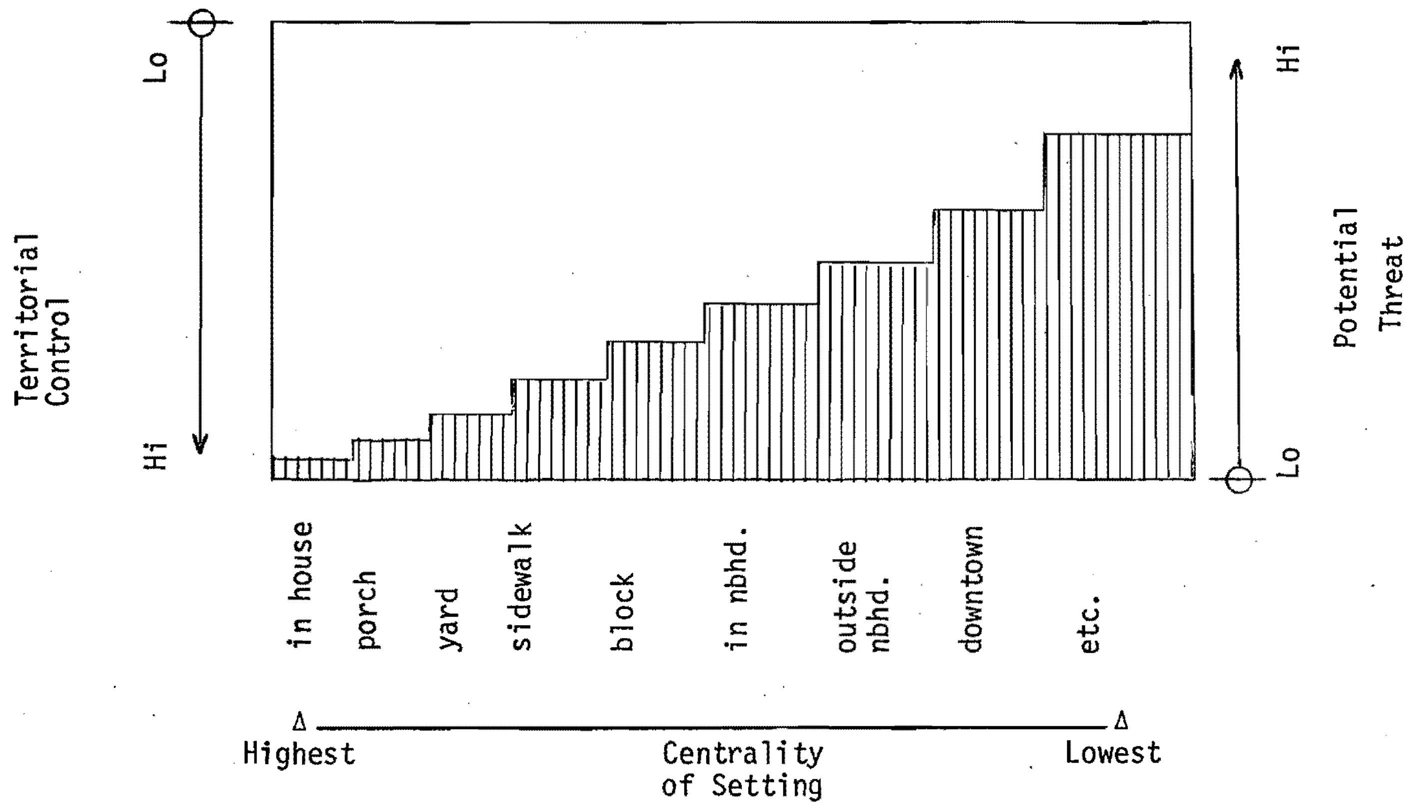
As one moves from a more central to a less central setting, there is more tolerance for unusual, unpredictable behavior, and consequently occupants seek a lower level of territorial control. Settings may, therefore, be viewed as "steps" along a continuum of centrality. This is illustrated in Figure 1, where the unshaded space above each step represents the amount of territorial control the occupant feels he has over that setting. The shaded space below each step represents the amount of potential threat that the occupant experiences (or expects to experience) in that setting. The model assumes that threat and control can both be operationalized independently.

At the high end of the centrality dimension the difference in elevation between settings, i.e., the difference in height between adjacent steps, is small, that is, only a small increment in threat can be tolerated between adjacent high centrality settings. Thus there is a gentle gradient of diminishing control and increasing potential threat as one moves from home spaces to near-home spaces (like the yard, alley and sidewalk) to the street. Because the difference in the level of potential threat between adjacent settings is small, the differential can be maintained by subtle visual signs like boundary markers, changes of material , use of planting, exhibition of ornaments, and objects associated with use, care and occupancy. If the differential were large, these subtle signs would provide inadequate protection, and defensive screens or barriers with greater deterrent power would be needed to protect the more central setting against inroads from the adjacent, less central one.

When one moves to settings at the low end of the centrality dimension, the need for control is less urgent and there is greater tolerance for potential threat. A suspicious looking stranger will attract less attention in a

Figure 1

An Ideal Distribution of Territorial Claims



shopping center than he will on one's front lawn. The difference in height between adjacent steps is, therefore, larger as one moves to settings that are lower on the centrality dimension. The gradient of diminishing control and increasing potential threat becomes steeper because an occasional transgression becomes less alarming, and visual signs are capable of maintaining an increasing differential between settings. If the differential exceeds acceptable limits, however, visual signs must again be replaced by defensive screens or barriers.

The relationship between centrality of setting and the change in level of desired control and tolerable potential threat, is depicted in Figure 2.

The model, then, incorporates three principal components.

The first is that visual signs and defensive barriers are devices that are used to maintain differential in threat, and in control, between spaces which are adjacent on the continuum of centrality.

Defensive barriers include fences, walls, gates, surveillance by residents, supervisors or police, electronic alarms and warning devices, guard dogs and burglar bars. The display of defensive barriers represents a deliberate action aimed at warning, hindering, or obstructing potential intruders. These barriers are probably required when the difference in elevation between two adjoining settings is felt to be so great that coercion rather than communication is essential.

Unlike defensive barriers, the display of visual signs is more frequently the result of habit, intrusion, or social pressure, than of deliberate intent to communicate territorial claims. Nonetheless, these signs do serve to communicate the existence or extent of particular territorial claims, and, by inference, the behavioral restriction associated with such claims. The reception, decoding, and response to these signs depends upon a shared understanding of what the signs convey, and a consensus about how to respond. Thus, as sociocultural homogeneity increases these signs are likely to be more effective. Visual signs include territorial markers such as ornaments, flowers, and other signs of ownership.

The second important concept inherent in the model is that as settings become less central, there is more <u>tolerance</u> for threat. In less central settings, higher potential threat levels are accepted, and so too are bigger differentials between settings.

In the ideal situation then, a person tolerates gradually increasing levels of threat, and demands gradually decreasing levels of control as he/she moves from highly central to non-central settings.

The third concept of the model is that absolute levels of threat and control, and the differentials between adjoining spaces reflect a resident's view of what is desirable and possible in the context of a social ecosystem. Consequently, the ideal step profile will be different in different types of environments to reflect differences in, for example, fear levels, willingness to engage in collective appropriation or to confront interpersonal differences, and existence of a common code of behavior.

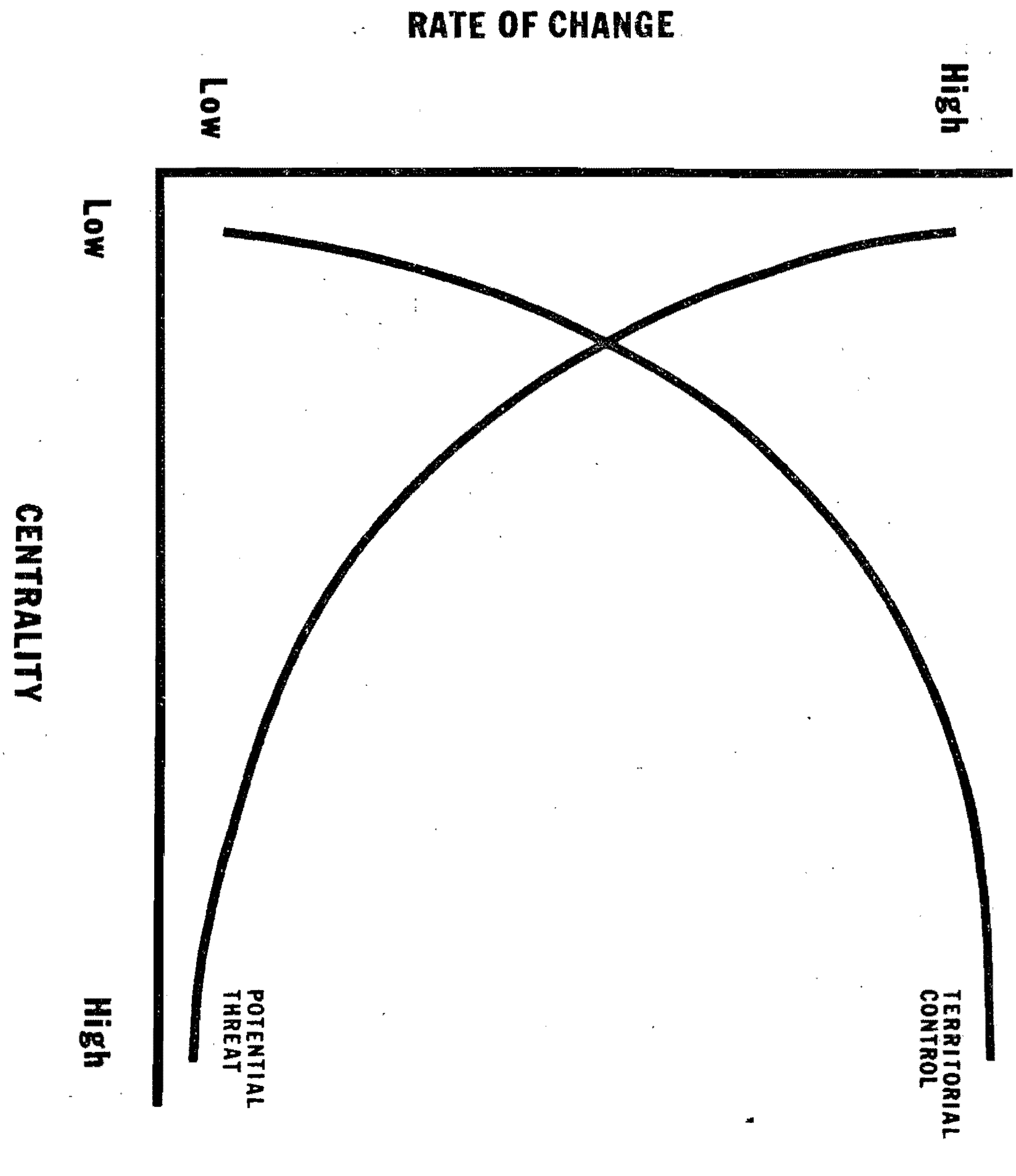

RATE OF CHANGE
Low
High
CENTRALITY
Low
High
POTENTIAL THREAT
TERRITORIAL CONTROL

FIGURE 2

A Discussion of the Terms in the General Model

In this section we discuss the critical terms that are used in the general model, make clear our uses of these terms, as well as their origins.

A. The Centrality Dimension

We have suggested that settings vary along a continuum of centrality. More central settings are those in which residents exhibit the strongest territorial behavior. The term centrality has also been used by others to indicate spaces that are more important to the occupant's life space (Lewin, 1951), enable him/her to carry out and maintain particular roles (Edney, 1976), and provide more privacy (Altman, 1975).

Our use of centrality is similar to Altman's (1975, pp. 111-112) in that in more central settings one is more likely to encounter primary (i.e., family-based) ties. We do not, however, restrict the centrality dimension to settings that are demonstrable territories. Our use of centrality is also closely related to Stokol's distinction between primary and secondary environments (Stokols, 1976, p. 73). He has suggested that primary environments include those settings where a person spends much time, encounters known others on a regular basis, and engages in meaningful behaviors. Secondary environments, he proposed, are those places which one enters infrequently and for short periods of time, and where one usually is anonymous. In contrast to Stokol's notion of primary and secondary environments, however, our notion of centrality is continuous and not binary.

We readily grant that centrality has several components (cf. Taylor, 1977), but suggest that these various components are likely to be positively interrelated.

B. Potential Threat

Potential threat is simply the likelihood, as seen by residents, that potentially damaging, upsetting, dangerous or un-nerving things will happen. Potential threat is represented by unfamiliar people or events, and by incivil persons who are likely to trespass, vandalize, or engage in taunts, insults, or confrontations. People and events that are familiar and acceptable in non-central settings may be interpreted as potential threats if they were transposed to more central settings. At the same time decreasing tolerance as one moves inward along the centrality continuum is counterbalanced by an increased sense of responsibility for the maintenance of the setting.

C. Perception of Threat

Whether a particular person or event is perceived as threatening in a particular setting, will depend upon several factors: the real chance that damage or harm will follow, the resident's own ability or preparedness to deal with the situation so as to avert damage or harm, and the resident's vulnerability. One would expect that a sudden increase in the rate of crime will result in a resident being more worried about strangers in home and near-home spaces, and more fearful when venturing into more distant spaces. One would, however, expect that if the crime rate remains high, a resident will take protective action (like building barriers, forming defensive alliances in certain spaces, and avoiding other spaces altogether) and as a result that the same events will be seen as less threatening. Women, the elderly and parents of young children have a lower threshold of tolerance than the general population. In the same way, residential communities that rely entirely on a shared code of behavior and mutual trust in order to maintain territorial integrity are vulnerable to sudden population changes; neighborhoods where residents rely entirely on a shared code of behavior and mutural trust in order to maintain territorial integrity are vulnerable to sudden population changes; neighborhoods where residents rely more heavily on protective and defensive measures are more tolerant of strangers and facilities that cater to strangers.

Rules governing territorial behavior are incorporated into the code of conduct that a society establishes for its members. In a closed or highly conforming society, where members can be relied upon to know and obey the common code, an occupant can secure control over a space simply by indicating, with recognizable signs and symbols, the existence of the claim. In a more complex society, or a more disorderly one, or in the case of a space with unusual control requirements, the occupant may have to engage in active intervention, screening access and regulating use.

The occupant of a territory is not necessarily a single individual. The occupant can be several or many people who act collectively as members either of a family (as in the case of a house), or of a restricted group (as in the case of neighbors being territorial about their common street), or as members of the larger society (as in the case of city residents acting to protect an historic shrine). An individual may identify with many different groups (the strength of identification varying with the closeness of membership ties and the frequency with which group settings are used). Each group will have its own spaces along the continuum of centrality. (For church members it may be the sanctuary, for neighborhood association members it may be a local landmark, for members of the urban community it may be the civic center or the waterfront). There is, therefore, considerable variability in the amount and type of control that is sought in specific spaces, so that one could not assemble a universal ranking of all spaces as a continuum of settings. Nevertheless there is considerable agreement about types of settings for types of groups, and substantial agreement among individuals about the most central spaces, those in the vicinity of home. Most people would agree on the need for more control in their yard than on the sidewalk in front, and more on the sidewalk than in an off-block space. As territorial control increases in a space, problems such as litter or unwanted intrusions will lessen, the occupant will recognize more people in that space, and feelings of responsibility will increase. The person will feel safer and less threatened there.

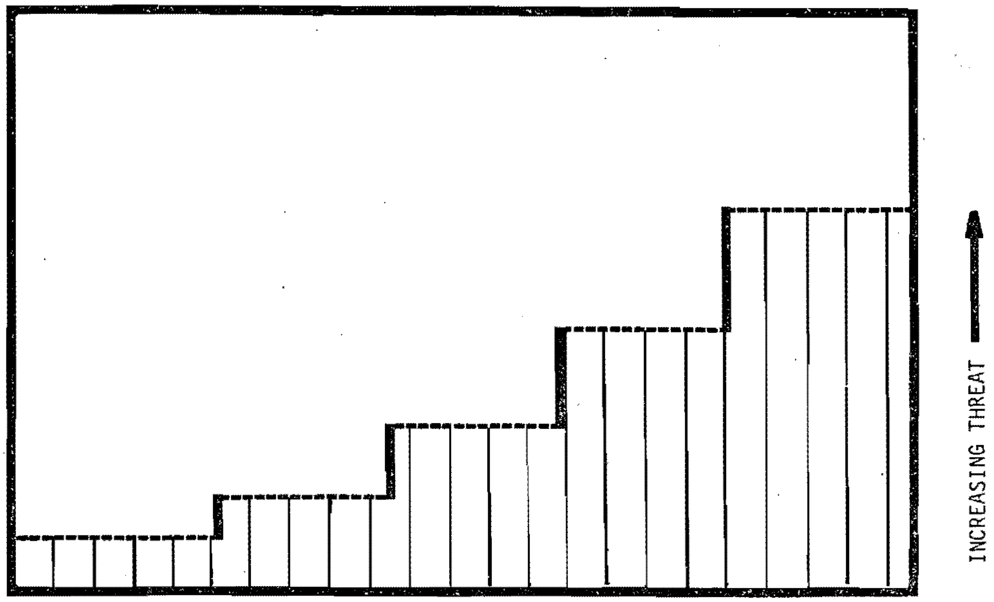
D. The Slope of the Curve

Across a range of settings, going from high to low centrality, we hypothesize a positively accelerating level of potential threat. In some areas, threat may increase more rapidly than in others, i.e., in some areas there may be steeper staircases than in others. Figure 3 illustrates two different cases.

In the top case in an environment characterized by gentle transitions between adjacent settings. This is the profile of an area where the overall

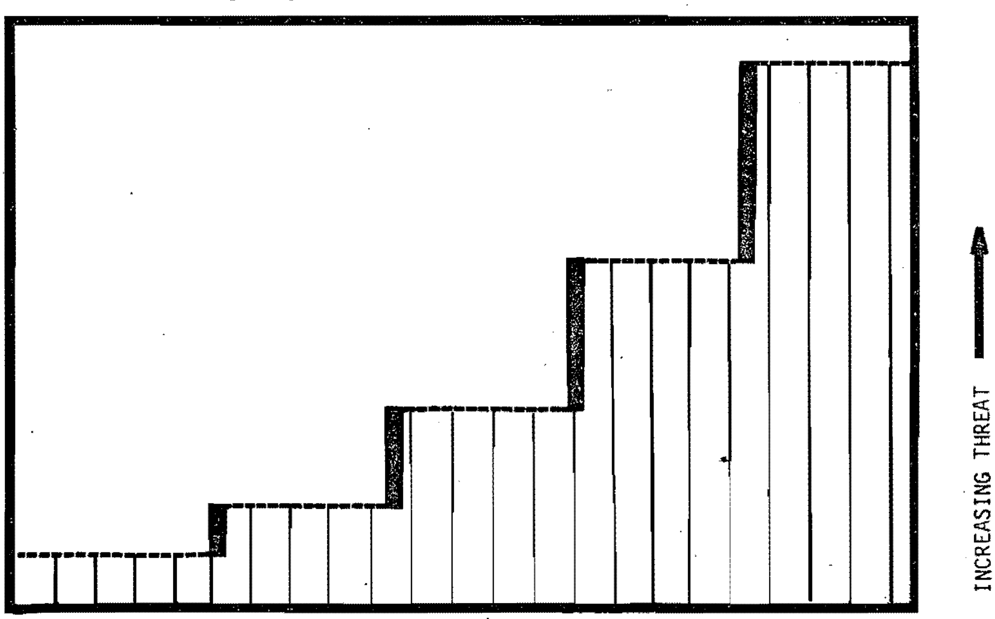
FIGURE 3

Slowly Increasing Threat



HIGH CENTRALITY LOW CENTRALITY

Rapidly Increasing Threat



HIGH CENTRALITY LOW CENTRALITY

difference in threat between the most central and the least central spaces is divided among many small steps, each associated with a particular setting - house, yard, sidewalk, private local street, restricted neighborhood, etc. - and each successive step is small enough to be maintained by visual signs.

The bottom case in Figure 3 is an environment marked by steep transitions between adjacent settings. There are fewer, and therefore larger, steps separating most-central from least-central spaces. The overall difference in threat levels between adjacent settings is too large to be maintained by visual signs alone, leading to the need for defensive screens and barriers. This is the profile of an area where the house is entered off the public sidewalk, on a street with considerable through-traffic, adjacent to a high-crime neighborhood, etc. Defensive measures might include locks on doors and bars on windows, no loitering signs on steps, watching over sidewalk in front of the house, cooperating with neighbors in watching the street, avoiding going into adjoining neighborhood, etc.

The slope of the curve is therefore an indication of the social ecology of an area and the step profile can be particularly useful when assessing the impact of possible social and physical changes in an area.

Adaptation and Balance

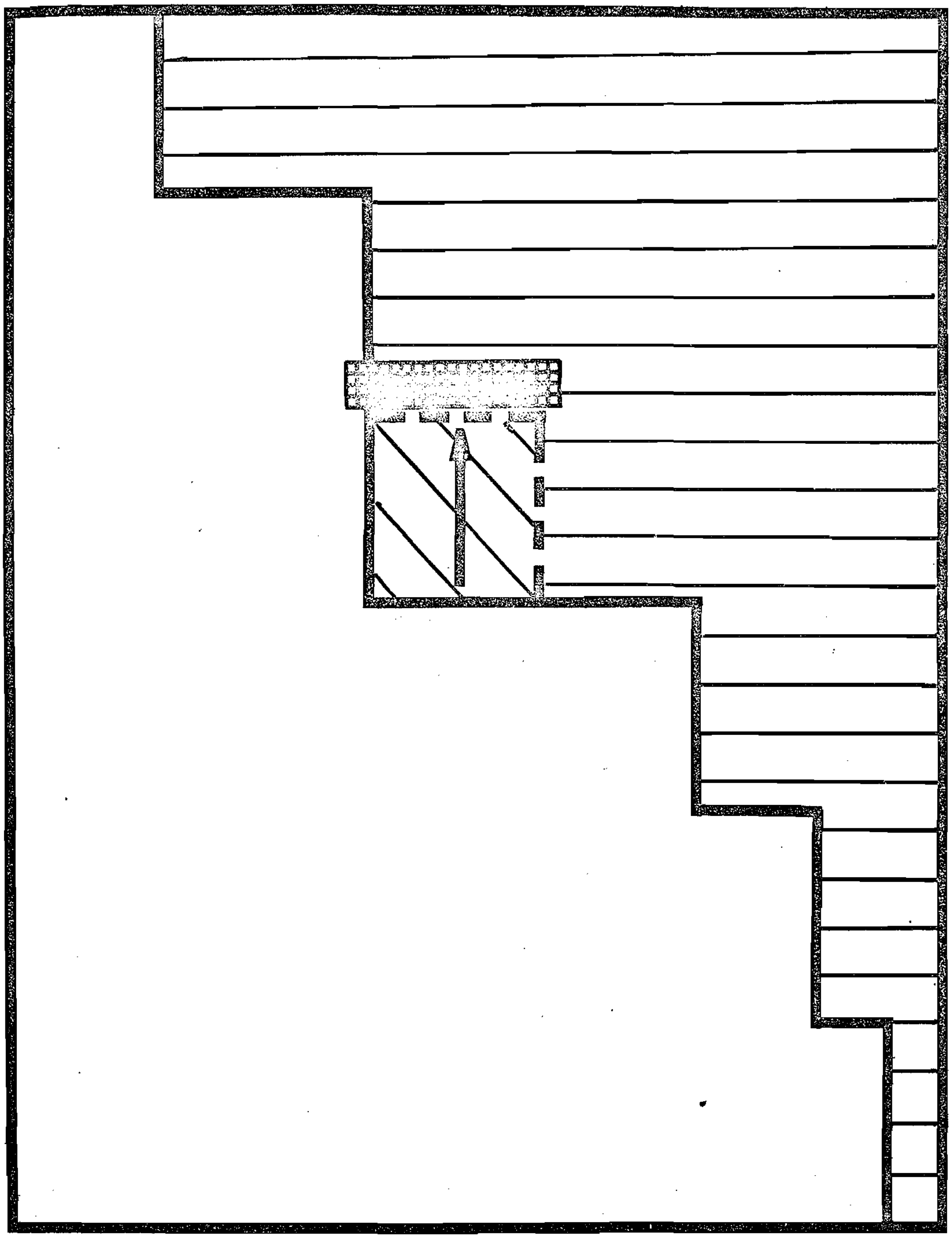
We have suggested that the interaction of social and physical elements in a neighborhood requires adaptations and can result in a situation where real territorial control matches exactly the need for control. The staircase profile of that neighborhood at that time can be said to represent the "ideal." Up to this point we have been discussing such ideal situations.

But the fact that there had been previous adaptations implies that there had once been a mismatch between real and needed territorial control, or between control and threat, and we may expect that future changes in social or physical conditions or in expectations (the result, for example, of more or less crime, more or less traffic, new people moving in or oneself moving into a new area, sickness or a new child in the family, development of a new playground on the block, etc.) can once again require adaptations in an attempt to achieve a new ecological balance. The need for adaptation can be represented by differences between the ideal and the derived staircase profiles. In the following paragraphs we consider the types of responses that people might make to remedy a mismatch in the form of a cliff-like step that suddenly appears on a low and gradual staircase.

E. Expansion

One response is for residents to seek to establish a larger domain of control. (See Figure 4.) For example, residents who feel that strangers in their street represent an undue threat to their home space, may band together and exert territorial contract through a civilian block patrol; they may even close off their street to through traffic (cf. Appleyard, 1976; Gardiner, 1978; Newman, 1979.) This model has the effect of pushing the threat to a less central space where the increased differential is less menacing.

FIGURE 4



This is essentially the model proposed by Newman (1979) in Community of Interest, when he suggests that homogeneous enclaves could take charge of a several block area.

Application of this model can also be exemplified by residents opposing a new non-residential use in the neighborhood (i.e., pushing a facility that attracts strangers beyond the boundary of the collective territory.)

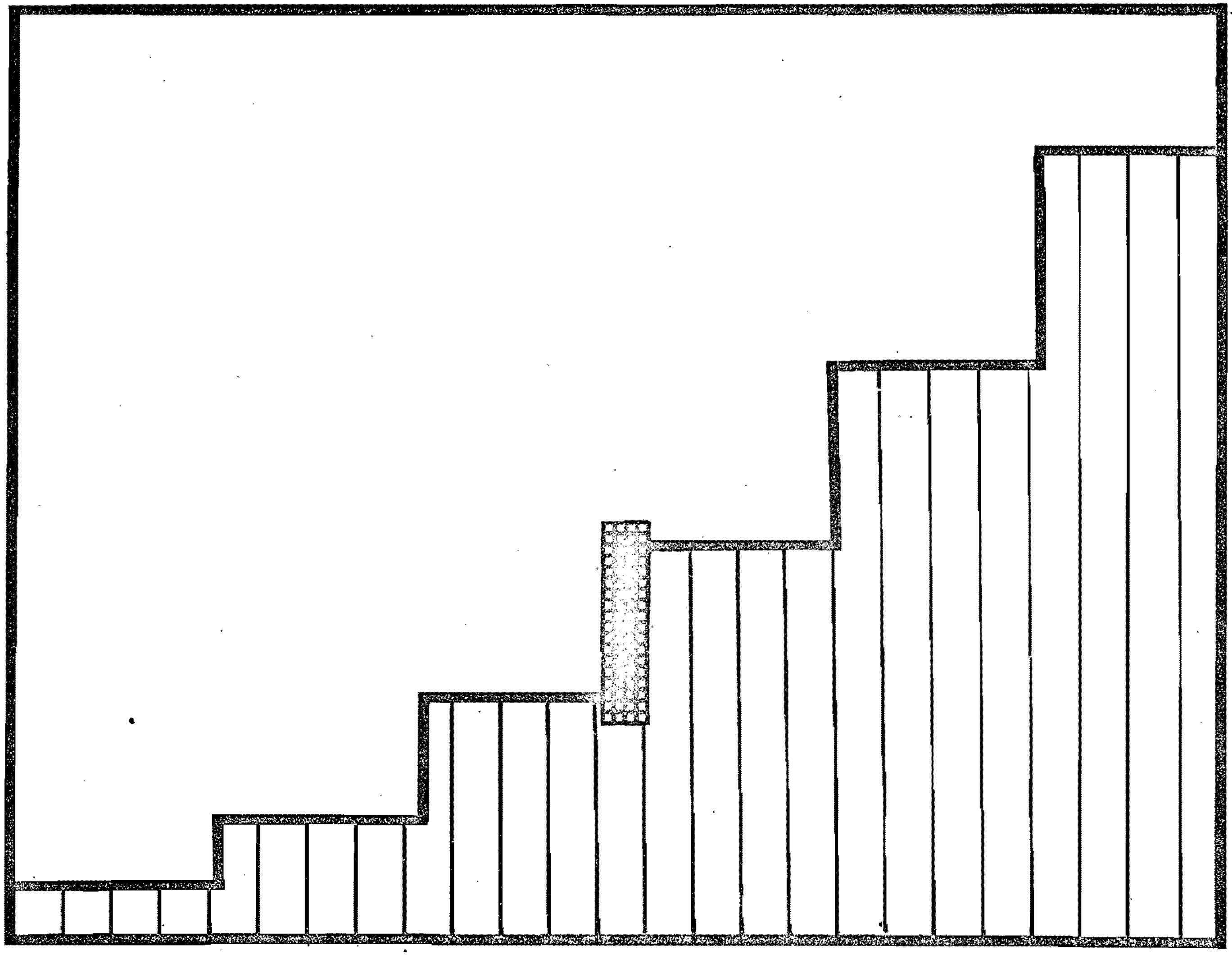
An expansionist approach to uncoupling or anomalous bulges carries with it several implications. First, such an approach is inherently a collective response. Thus, its success depends upon the quality of the interpersonal relations between the affected residents. On blocks where residents share common concerns, backgrounds, values, and ties, the collective approach is more likely to succeed. On heterogeneous blocks where residents are or perceive themselves to be dissimilar to each other, the approach would be less likely to succeed. Second, the expansionist approach requires considerable effort from those involved. Figuratively, it's an uphill battle. Thus, chances of success are modest at best. The residents may insist on a higher level of control, and not be able to achieve it, thereby causing considerable distress. If they do achieve their goal, however, or at least feel that they are making progress toward their goal, they will probably experience feelings of mastery, control, or lessened fear. (Cohn, Kidder, and Harvey, 1978). Third, inherent in the expansionist approach is the possibility of a tyranny of the majority. In seeking to make their street or park or neighborhood safer, residents may resort to discrimination and attempts at segregation. They may seek to deter or bar those who do not pose a threat, but who are just different. They may seek to exercise too much control. This is exactly the problem with neighborhood covenants, and of the factors that led to the demise of the neighborhood concept in the late 40's (Isaacs, 1948). In sum then, the expansionist requires a congenial social climate, is effortful and may result in distress or mastery, and may lead to an excess of resident-based control.

F. Bulwarking

A second approach is to establish strong defensive barriers (see Figure 5). This approach relies primarily on surveillance and use of mechanical or physical devices to protect a setting against a large differential in potential threat in the adjacent less-central setting. This approach does not eliminate the large step in the staircase, but instead it is a form of accomodation to it. Thus, a resident whose yard abuts a busy sidewalk can erect a wall or a fence with gates, install an alarm system, a warning or surveillance device, or use a guard dog. The bulwark approach can also be used by a group, and it can be used in combination with an expansion approach. For example, an association of residents, where each resident has a part in the collective appropriation of the street, can respond to a large step-up in threat at the entrances to the street by creating a cul-de-sac at one end, and by installing a gate and gatehouse with guard at the other. It is not unusual for bulwarking to be used in connection with settings that are low on the centrality continuum, although medieval cities with their walls and gates serve as historical examples of the use of this approach.

Several features of a bulwarking approach are notable. First, in the standard residential environment such an approach may be costly. It takes

FIGURE 5



money to build fences or install alarms. (Of course, in apartment buildings or projects or office buildings, the costs may not be directly passed on to the occupant.) Thus, such an approach is not likely to be popular among persons with less financial resources. Second, the establishment of strong defensive barriers is most likely to occur on boundaries of private property. Establishment of control over public areas like pocket parks may occur, but rarely. Thus, this barrier-oriented approach is tantamount to giving up on control over public places. Third, the barrier-oriented approach, since it is an individual-level response, is not dependent upon social climate for its success. But, at the same time, it is not likely to lead to improvements in social climate either. Fourth, this approach does not eliminate heightened threat, but is a form of accomodation to it. In sum then, the establishment of defensive barriers is an individual-level approach which is expensive, but which may lead to less regulation in some settings, and to a deterioration of local social ties.

G. Retreat

In this approach a resident, faced with an unacceptable level of threat in a particular setting, does not attempt to shift the threat further away (as in the case of expansion) or to build defenses against it (in the case of bulwarking) but instead reduces territorial claims to the space, or even abandons them entirely, and retreats to the adjacent more central setting (see Figure 6). In the place retreated to the resident may use a bulwarking approach. Thus, a resident faced with continuing trespass and vandalism in the front yard, may cognitively and behaviorally redefine the yard as an extension of the sidewalk rather than of the house. In such a setting, a lower level of resident control (and of care and maintenance) is called for, and the same outsider behavior is seen as far less threatening. In the same way, a group of residents, faced with a sudden influx of through traffic, may redefine their street as a public thoroughfare and resort to closing their windows, or to erecting walls and fences around their individual yards.

One of the beneficial results of such withdrawal is that, while there is no change in the level or type of outsider behavior, this behavior is no longer labelled as a problem. In the long run, however, this approach may be more stressful because in actuality a higher level of potential threat is moved closer to more central spaces. This may well result in higher fear levels (Cohen et al., 1978).

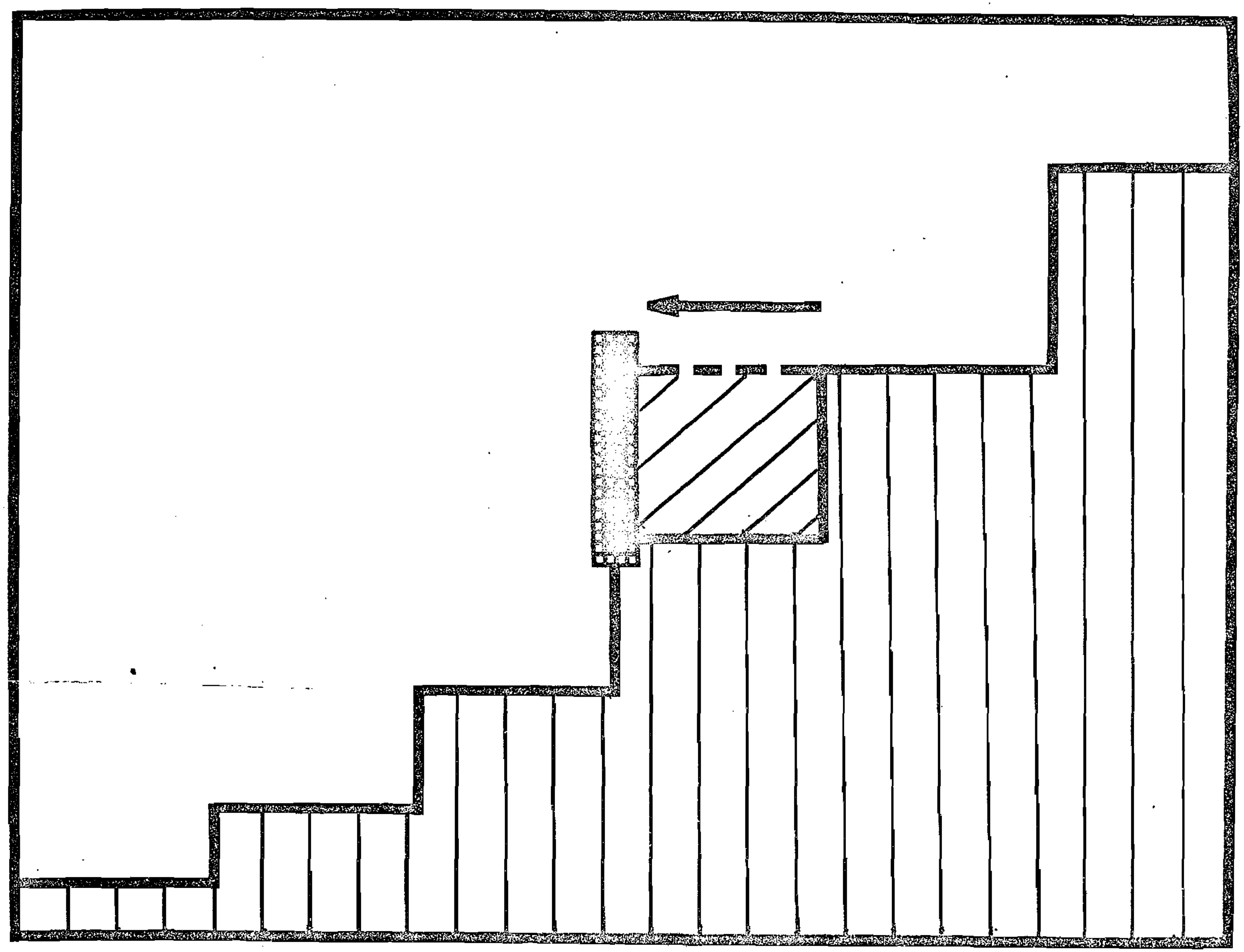
Furthermore, such an approach, in contrast (respectively) to the first and second approach, requires little effort and little cost. And, in contrast to the first approach, there is no continuing ambiguity about who has how much control over particular spaces.

Some Relevant Data

In this section we discuss some data which is relevant to some of the propositions which we have been discussing. The evidence is fragmentary, but, it is heartening as far as it goes.

Several items suggest that control decreases and problems increase as we go from high centrality to low centrality settings. Summing up research on

FIGURE 6



responses to crime, Dubow, McCabe and Kaplan (1979, p.8) report, based on several studies, that people perceive crime rates and risks to be greater outside of their neighborhood than they are in the neighborhood. "People perceive all types of crime as more serious, as increasing more, and of great public concern in places other than their own neighborhoods. They do not deny the existence of crime locally, but view it as more delimited and manageable a problem than the crime problems of other locales" (Dubow, et al,, 1979, p. 9). This pattern also appeared in our present study. Whereas 79% of the full sample (Surveys I and II) felt that crime in the U.S. was increasing, only 24% felt that crime was increasing in their neighborhood. In addition to a "step" between neighborhood and non-neighborhood spaces, evidence exists concerning other steps as well. Survey I data indicated that problems related to a lack of control were higher in near-home spaces (sidewalk, alley) than in home spaces (front and back yard) ($p < .05$). Clues were also obtained with regard to a step between block and off-block spaces. In the latter, responsibility for what goes on was significantly lower ($p < .05$). Also, in the pilot test, when asked were there any problems on the block, many respondents replied that there were never any problems on their block, but just around the corner people were continuously getting shot or stabbed. Thus, in several respects, respondents in the present study revealed a step-wise progression of increasing threat and decreasing control.

With our data we also sought to determine whether territorial control did indeed vary inversely with perceived threat. Thus, we examined the fear levels reported, in various settings, by persons who perceived different amounts of the block as home. The results appear in Table 1. The data support our notions. For example, 40% of the respondents who say their home includes only their property report a fear level of 4 or higher for sidewalk, whereas 26% of the respondents who say their home extends to the sidewalk or street report a fear level of 4 or higher for sidewalk. Similar patterns are observed for the alley setting as well. Thus, the data support the notion that territorial dominion and threat vary inversely.

The Step Heuristic as an Organizer of Comparative Findings

The step heuristic provides a useful framework for organizing and clarifying the complex, often confusing ways that people respond to even a single kind of change in the physical or social environment. Let us consider, for example, the following ten comparative findings in two different kinds of neighborhoods. Low-income, rental neighborhoods are referred to as N1, and middle-income, owner neighborhoods as N3. These findings are all from Survey I.

1. There is a significantly greater level of threat in N1 than in N3.

2. In N1, near-home spaces are high-threat territories (similar to off-block spaces); but in N3, near-home spaces are low-threat territories (similar to home spaces).

3. As social ties get stronger, insider/outsider discrimination in off-block spaces increases in N1, but it decreases in N3.

Table 1

Fear Level as a Function of Perceived Extent of Home

Home Extent	Fear Level	Setting: Property in front	Property behind	Sidewalk	Alley	Park	Store Sidewalk
Q13 (1,2)	1	15.6	12.5	11.9	6.6	3.7	6.8
	2	47.3	44.0	45.4	28.1	14.6	28.8
Home includes	3	3.2	2.7	3.2	1.8	2.4	4.5
own property	4	8.6	7.6	11.4	4.8	3.0	9.0
	5	19.4	22.3	18.4	31.1	29.3	28.8
	6	5.9	10.9	9.7	27.5	47.0	22.0
Q13 (3,4)	1	16.7	13.6	14.4	7.2	3.6	5.4
	2	59.8	52.3	53.0	42.4	17.3	30.0
Home extends to	3	1.5	4.5	6.1	5.6	3.6	8.5
sidewalk or street	4	6.8	9.1	9.8	10.4	7.3	10.0
	5	12.1	15.2	12.1	23.2	39.1	30.8
	6	3.0	5.3	4.5	11.2	29.1	15.4
Q13 (5,6)	1	18.0	13.4	11.7	3.3	0.9	5.6
	2	51.6	59.8	57.0	42.6	23.9	42.1
Home extends to	3	4.7	0.8	3.1	4.9	2.6	0.8
include half of	4	4.7	3.9	7.0	9.0	7.7	10.3
block or more	5	16.4	15.0	16.4	18.9	29.1	26.2
	6	4.7	7.1	4.7	21.3	38.9	15.1

Note. Numbers are adjusted frequencies, i.e., percent of respondents who indicated that fear level in that space. Low score on fear level = 1, high score = 6.

4. As social ties get stronger, insider/outsider discrimination in near-home spaces decreases in N1, but it increases in N3.

5. In N1, as social ties get stronger, off-block spaces and near-home spaces become more similar in terms of insider/outsider discrimination, but in N3 the two types of spaces become more dissimilar.

6. In N3, when social ties increase, there is less feeling of responsibility in off-block spaces. This is not true for N1.

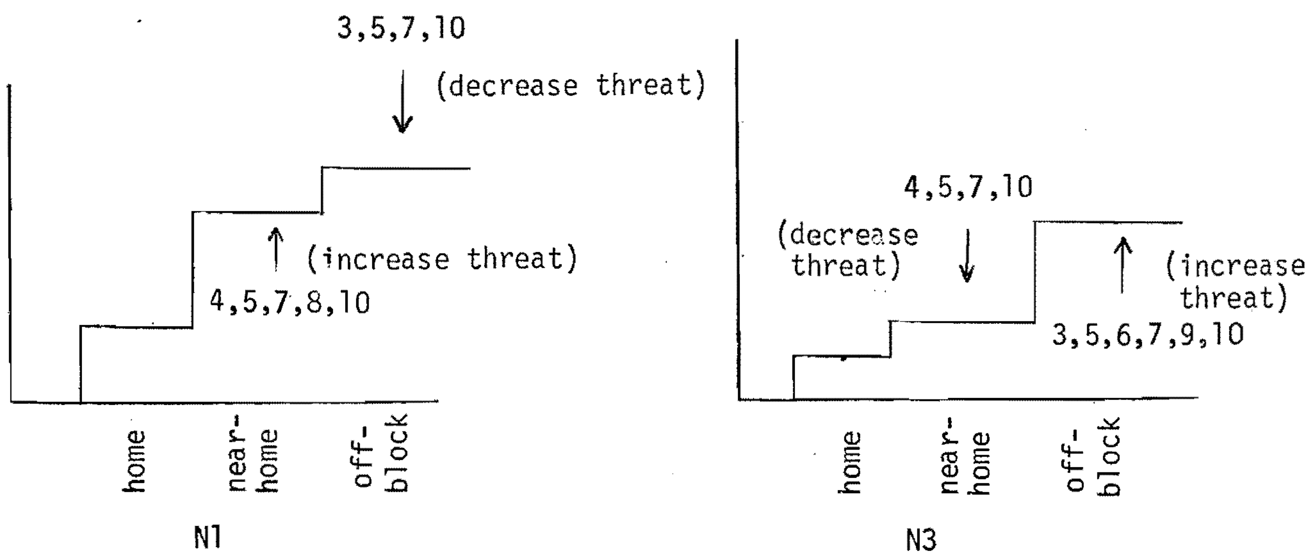
7. In N1, as social ties get stronger, off-block spaces and near-home spaces become more similar in terms of feelings of responsibility, but in N3 the two types of spaces become more dissimilar.

8. In N1, as residents get more similar, feelings of responsibility in near-home spaces are reduced significantly. This is not true of N3.

9. In N3, as residents get more similar, feeling of responsibility in off-block spaces is reduced. This is not true of N1.

10. In N1, as residents get more similar, off-block spaces and near-home spaces become more similar in terms of feeling of responsibility, but in N3 the two types of space become more dissimilar.

These effects of increased similarity and stronger social ties can be diagrammed as follows. Each finding is represented by its reference number as something that increases potential threat (reduces territorial control) or reduces potential threat (increases territorial control).



The diagrams show that increased similarity and stronger social ties operate quite differently in the two different types of neighborhoods. In N1, they serve to increase threat close to home, and reduce the differential between various non-home spaces. In N3 they serve to shift threat further from home creating a greater differential between block and off-block spaces. In one case we find a stronger home/near-home dichotomy; in the other, a stronger block/non-block dichotomy.

At the moment we can only speculate about reasons for these differences in territorial pattern. It would seem that in N1, social intimacy brings the outside world to one's doorstep but helps to ameliorate its more serious threats; in N3 this intimacy keeps the outside world away but makes it seem more fearful. This must say something about the different effect of intimacy in the two neighborhoods; in one, bringing out shared interests and extending the home space with all residents of the block seen as insiders (at the same time making the world of outsiders seem more menacing); in the other, exposing differences and bringing conflict into the street (and so weakening residents' ability to cope with potentially threatening outsiders off the block). Whether this difference in territorial behavior is a consequence of difference in level of threat (N3 neighborhoods have a significantly lower threat level) or whether it is due to other social (e.g., income, education) or physical (e.g., density, crowding) factors, we are unable, at this time, to say.

Hypotheses

The step heuristic suggests a number of hypotheses. We outline here what we feel may be some of the more important hypotheses that can be derived.

1a. An area such as a block or neighborhood is most likely to mount a collective-based, expansionist approach to increasing crime of problems if a congenial social climate already exists, or, if a standing, effective organization already exists. Without such a priori setting conditions, the basis for an expansionistic solution simply is not there.

1b. An expansionist approach, once implemented, must be perceived as almost immediately effective, or else it will be abandoned. To collectively appropriate or control an area is a very effortful undertaking. As such, it is costly to the people who contribute to it. The continuation of such a costly endeavor can only be justified if it is successful.

2. Increased territorial behaviors, and stronger territorial attitudes are likely to occur in places where (a) threat level is not high, and (b) the increase in threat is not drastic. Thus, retaliation or even a perceived likelihood of retaliation may be a very strong deterrent to direct territorial behaviors. For example, a resident may think twice about telling kids to stay out of his/her backyard if he/she fears that the result (at a later time) may be a rock through a window. Thus, apprehension about consequences may be a strong deterrent to a more forceful exercise of territorial control.

3. As local social climate becomes more heterogeneous, and therefore more unpredictable, residents may also become more cautious, for the reasons discussed above, in their exercise of territorial control.

4. Psychological retreat, which is the most direct accomodation to increased threat, will be more likely to occur among persons who already feel a lack of environmental mastery, and who do not have local ties. Thus, among the elderly, or handicapped, or senile, or socially isolated, accomodation is the most sensible response to threat. These people lack the material means, attitudes, and the social support to demonstrate a defensive, bulwarking response or an expansionist response.

A Comment on the Place of the Model

The step heuristic we have outlined has several major assets. Most notably, the framework is conceptually broad, and thus, suggests hypotheses about how physical features, social ties, and territorial functioning may be intertwined. The model is also comprehensive in the sense that it simultaneously provides a range or continuum of settings, and argues that the relationships between these spaces along the entire range of centrality, is important. And, the focus on a range of settings also suggests the kind of cross-level links, between people and blocks, and between blocks and neighborhoods, that may exist. Thus, in several respects, a theory such as this, if more formally developed, may provide the type of comprehensive approach needed for understanding crime, fear, and problems in the residential environment.

CHAPTER 15

AN INTEGRATIVE REVIEW OF FINDINGS

Ralph B. Taylor
Stephen D. Gottfredson
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In this section we review the various findings we have presented. Each link in our major model is pinpointed, and the findings that pertain to each link are considered.

Introduction

In Chapters 5 through 11 we have presented a broad array of research findings, based upon a variety of different methods. Although we have placed these results in different chapters the findings are intertwined in many respects. The various results complement, illuminate, magnify, or feed upon each other. In the present chapter we integrate these various findings and demonstrate how they interrelate within a single conceptual framework. This examination reveals that our findings are not a set of disconnected building blocks scattered on a plain. Rather, the findings build on one another to form a coherent entity. Of course, parts of this structure we are describing are not as yet in sharp focus. Nonetheless, we are confident that future research will be able to dispel this miasma. At least (and this is no small gain) the general structure is clear.

As we integrate our findings it will also become apparent that our revelations fall into three categories: (1) those that were clearly anticipated by our theoretical perspective and did indeed appear; (2) those that were not anticipated by our theoretical perspective but appeared consistently in different methodologies, and (3) those that were not anticipated by our theoretical perspective but surfaced in one investigation <u>or</u> another. Each class of findings is important, although perhaps for different reasons. And, at the same time each class of results is qualitatively different from the others. The first class of findings is important because it is a capstone, or a consummation of prior theorizing. Thus, it conveys the following information: when we provide as strict a cross-sectional test as possible for variables derived from a particular orientation (defensible space, territoriality, or informal control), they pass the acid test. Therefore, such orientations, and their implications, deserve further attention from theorists, policymakers and other practically-minded people charged with solving, or just concerned about, the issues of crime, fear, and problems in the residential environment. The second class of findings is important because it pinpoints areas of attention that absolutely demand further conceptual development. Such findings underscore complexities or limitations not contemplated (explicitly) by the conceptual armamentarium brought to bear on the issues at hand. In some respects these are the most exciting discoveries because they portray the slippage between the complexities and variations in the urban environment, and the theories used to understand those settings. The third class of findings is perhaps the most difficult to deal with. These results tell us -- yes, your theory worked, but sometimes in ways you did not anticipate. It is hard to tell how much credence to put in such patterns. To some extent, of course, we can look for support from other studies. But, such searching is admittedly ad hoc and thus only partly settles the ontological status of such results. On the other hand, these findings are puzzles that, on a theoretical level, are at the worst troubling, and at the best a lodestar pointing toward better or more complete theory.

The present chapter is organized as follows. We review our findings in the context of our theoretical model (see Figure 1; see also Chapter 4). When our results are considered in this context the conceptual bridgework between various findings is revealed. This effort then allows us to reassess our model and consider our findings in the context of past work. Finally, we review and organize the theoretical implications of the present results.

An Integration of Findings

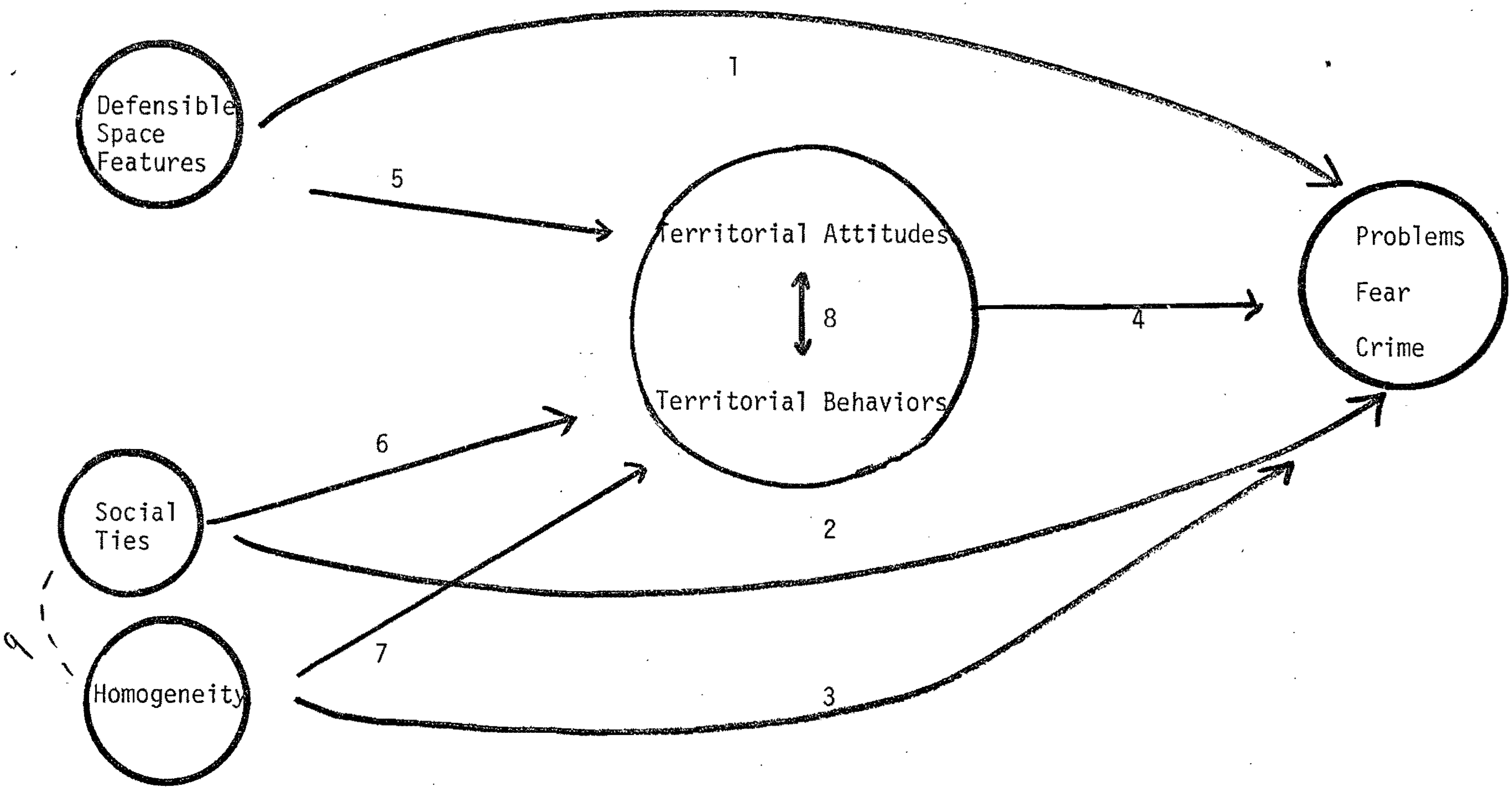
The links which appear in our theoretical framework (Figure 1) have been numbered. We will discuss the results as they pertain to each of these links, thereby demonstrating how our results interlock synergistically. Links 1 through 4 represent direct effects of predictors on outcomes, 5-8 represent indirect links between predictor variables.

A. Link 1: Defensible Space Features and Crime-Related Outcomes

Several points of evidence substantiate our expectation that defensible space features will be associated with lower levels of crime-related outcomes. At the block level, more extensive defensible space features were associated with lower levels of police activity, less fear, and fewer problems (Chapter 5). The path analysis revealed that the direct effect was sizable, although not significant (Chapter 6). Projective responses from residents also revealed that they expected such connections to exist. People anticipated that on blocks where there were fences, it would be safer, people would be less likely to cut across backyards, residents would be more likely to stop intruders, and a passer-by would be less likely to filch a bicycle (Chapter 8). At the same time, results from the projective task suggested two embellishments to link 1: (1) if the threat is low, defensible space features and territorial behaviors (in terms of the presence of, and surveillance by residents) do not have additive impacts on crime-related outcomes, or on aesthetic outcomes. Additivity only obtains if perceived local threat is high. (2) Crime-related outcomes and aesthetic outcomes are linked. (Non-resident raters of different stimuli made this same connection (Chapter 10).) Respondents indicated that fences resulted in better-looking areas, as well as places expected to be safer. Our final piece of evidence concerning Link 1 comes from links between physical features and evaluative responses made by non-residents (Chapter 10). Judges who were planners, and, to a lesser degree, judges who were students, expected that sites with more extensive barriers typified safer neighborhoods where

Figure

Links Tested of the Major Model



residents were more concerned about activities in local spaces. In sum then, analysis in a cross-sectional framework suggests that defensible space features are associated with lower levels of crime-related outcomes, and, residents and non-residents alike expect such associations to actually exist.

Although it is difficult to think up competing or alternative explanations of the finding concerning people's expectations, one might argue that the actual linkage between defensible space features and crime-related outcomes is a matter of spurious correlation. That is, one might argue, for example, that socio-economic variables are responsible. High socioeconomic status allows one to buy or live in a site where barriers on the front exist, or are at least possible. And, such higher socioeconomic status blocks are also the same places where crime-related outcomes are low. Such a competing explanation is tenable, and indeed, may even be attractive to some. Closer examination of our data suggests, however, that this alternative reasoning is not totally correct. Tables 2, 5, 6, D-2, D-5, and D-8 in Chapter 5 are instructive on this point. We see that in the full model regressions, which include socio-economic variables such as race and length of residence, the explanatory power of defensible space features is reduced only slightly. On the average, the increment in R^2 goes down by a bit more than 2%. But, the increment is still significant in some cases, and several significant t-ratios remain. Thus, real and symbolic barriers are only somewhat determined by socioeconomic variables, and the inclusion of the latter does not nullify the impact of the former on crime-related outcomes. Therefore, the proposed competing explanation is not tenable.

A couple of additional comments about the observed nature of the link between defensible space features and outcomes are in order. First, several prior studies have found surveillance opportunities to be the feature that discriminated between high and low crime sites (e.g., Brown 1979; Waller and Okihiro, 1978, pp. 56-57). In the present study we measured surveillance opportunities, but the hypothesized relations failed to emerge, either for the front or the back. The failure to find this predicted relationship may be a function of the Baltimore environment where there is little variation in the surveillance layout at the front of dwelling sites, and what layout exists is tied closely to socioeconomic variation.

In addition, it is worth mentioning that the features measured that were characteristic of blocks as a whole (see Chapter 12, Appendix A), were not related to outcomes. Thus, for example, block configuration, or lanes of traffic, or type of lighting on the block, were not correlated with crime, fear, or problems. At the same time block characteristics based upon the average across individual sites (e.g., average level of real and symbolic barriers in front) were, by contrast, significant. And, in our opinion this disparity is important because it reveals one of the consequences of translating defensible space theory from the housing projects in which it was spawned, into the arena of the standard housing environment. In public housing sites variables such as number of apartments per entranceway have cropped up as pivotal variables (Newman and Franck, 1980). The importance of such building-level variables leads us to expect that block-level variables would play a crucial role in the traditional residential environment. But, they do not -- site- or unit-level features do.

In the public housing context this would be akin to finding that average apartment (e.g.) surveillance opportunities are important for building-level crime-related outcomes. Such a finding many would probably find surprising. In short, what I simply wish to point out is that when a particular theory is applied to contexts different from those where it was first tested, we must expect that variables will operate somewhat differently.

Perhaps even more importantly we must learn how to anticipate what those transformations will be. That is, what are the physical differences between one type of housing environment and the next, or the subcultural differences between one region and the next, that are responsible for these variations? Before defensible space, and other theories of informal control can be truly generalizable, these issues must be solved and modeled.

Finally, we wish to emphasize the symbiotic relationship between safety and aesthetic appearances, and the role that physical elements play in promoting both of those. In addition to the responses on the projective task (Chapter 8) in which fences resulted in safer and better looking places, nonresident judges also suggested that places which were physically run down or unkempt were unsafe crime-prone areas, where residents did not care (Chapter 10). Thus, in the eyes of both residents and nonresidents safety and aesthetics are intertwined. Therefore, future assessments of defensible space features should attend to their aesthetic as well as functional impacts.

B. Link 2: Local Social Ties and Crime-Related Outcomes

Our expectation that the development of local social ties would be correlated with lower levels of crime-related outcomes received its strongest support from the block-level regression analyses (Chapter 5) and path analyses (Chapter 6). These revealed that on blocks where more residents belonged to an organization which other residents also belonged to, calls for crimes of violence to persons were lower; and, on blocks where residents knew a higher proportion of co-residents by face or name, fear was lower. At the individual level, residents who perceived themselves as more similar to co-residents perceived fewer problems. These are the types of robust direct effects anticipated by theories of informal social control (Crenson, 1978; Wheeldon, 1969; Suttles, 1968).

Somewhat more indirect support regarding this linkage can also be obtained from our behavioral observation analyses (Chapter 9). Across the board, (i.e., on all seven observation blocks) as neighbor-to-neighbor contact is inhibited by the presence of large and variable groups, fear goes up. This points out the role of social incivilities (e.g. teenagers hanging on streetcorners) (Hunter, 1978) as indirect contributors to fear, as well as direct contributors. Social incivilities indirectly contribute to fear by making outdoor spaces unpleasant, and thereby discouraging residents from using the space or chatting there. Furthermore, on low crime blocks the increased presence of insiders was associated with greater neighbor-to-neighbor reliance for property-watching activities. Of course, since this latter finding pertains only to low crime blocks, it is more conditional than the other.

At the same time that several of our results provided support for notions of informal social control, they also provided some findings quite opposite to our expectations, i.e., as local ties increase crime-related outcomes also increase. These findings are as follows. In the regression and path analysis at the individual level, those residents who know a higher proportion of co-residents by face or name, experienced more problems. (Keep in mind that these are individual deviations from block means.) (Chapter 5 and 6). And, the behavioral observation analyses (Chapter 9) suggested that the increased presence of insiders supplants neighbor-to-neighbor helping on high crime blocks, or in high threat areas. Thus, local ties may be associated with the perception that things are worse.

We hasten to add that these deleterious effects of local ties have been anticipated theoretically and empirically. Theoretically, work by Young and Wilmott (1957) suggests that people are fundamentally ambivalent about local ties. Persons in strong networks have more resources to draw on but also may be victimized (e.g., slandered, have their privacy invaded) by those same ties. Empirically, we find that one of the more prevalent topics of conversation among neighbors is local problems (Hunter, 1975). Thus, increased channels make it more likely that people will hear more about local problems. In addition, we would like to suggest that there is also the possibility that people who are more involved locally may define particular events as more serious. Because of their increased attachment, or concern, or knowledge of victims, small-scale crime-related events may loom in importance. For example Clarren and Schwartz (1976, p. 145) found that those more involved in local issues were more likely to report property crimes of low seriousness to the police. The presence of local ties may operate in a similar fashion to the understanding of local issues, changing how particular events are cognitively defined. On a final empirical note, Newman and Franck (1980) found that in projects where residents knew more about one another, victimization was higher. Networks, however, reduced instability. Thus, we can see that there are reasons to expect complex connections between local ties and crime-related outcomes, and that such complex relations have occured. But, perhaps more importantly, these complexities and embellishments need to be incorporated into our theories of informal social control.

Our "conditional" findings about local ties from the behavioral observation analysis, suggested that co-residents were resources only in low-crime or low-threat areas, and that co-residents engendered suspicion in high-crime or high-threat areas. This "flip-flop" is in accord with an earlier study by Taylor, Brower and Sough (1976). They found that residents in inner-city areas quite similar to the high-crime areas in the present investigation, that co-residents were a source of bother. Although they could help out if trouble arose, they were also a major source of noise, litter, and rumor dissemination. Thus, views toward co-residents vary strongly depending upon the residential context. Of course, it is difficult to pinpoint the responsible feature of context. Our high- and low-crime blocks also differed in education, income, length of residence, and many other factors. But, the contextual influence on perception of co-residents is there: it also appeared in our abstract picture task. (This is discussed in more detail under Link 4.) Thus, this very important finding also deserves to be incorporated into further theorizing about informal social control and networking.

C. Link 3: Homogeneity and Crime-Related Outcomes

Our expectation regarding this link was that as objective homogeneity or perceived homogeneity increased, crime-related outcomes would lessen.

Our hypothesis about objective homogeneity was not supported at the block level (the only level at which these concepts were measured). Block level standard deviations on demographic items failed to correlate significantly with outcomes.

And, the individual level expectations about perceived homogeneity were supported when the outcome in question was fear (see Chapter 5, Table 8). Those who perceived themselves as more similar to others on their block were less fearful.

As an aside, we note that perceived and objective homogeneity were only very loosely coupled (see Chapter 13 for more detailed discussion). Although they were correlated in the proper direction -- as objective homogeneity went up so did perceived similarity. But this coupling was quite loose, suggesting that there is still much to understand about the consequences of objective homogeneity, and the determinants of perceived similarity.

D. Link 4: Territorial Variables and Crime Related Outcomes

Results supporting this hypothesized linkage were obtained largely from our regression and path analyses (Chapters 5 and 6). At the block level: knowing the neighborhood name and feeling more responsible for near-home spaces were associated with lower levels of calls for crimes of violence, and lower fear levels; and gardening in back, recognizing outsiders in near-home spaces, and knowing the neighborhood name were associated with lower problem levels. At the individual level: feeling more responsible for home spaces, and being better able to recognize who belonged in home spaces, were associated with lower fear levels. Thus, at both the individual and the block level, the territorial variables demonstrated the desired effect. And, they performed well even though they came last in the regressions and path models, and thus had the poorest chance to explain outcome variation.

Substantial support for this link also came from our projective test (Chapter 8). When residents saw the presence of planting, which may be interpreted as a territorial marker, they expected a safer area, where intrusions were less likely, and where residents would respond more quickly to any intrusions that did occur. Thus, not only is territorial functioning actually related to outcomes, but residents also expect this linkage to hold. Non-residents (see Chapter 10) also held similar expectations.

Our territorial variables did yield two unexpected links with crime-related outcomes. First, the block-level regressions indicated that the impacts of territoriality were somewhat contingent upon defensible space features and social climate (Chapter 5, Table 4). These interaction effects suggested that if people belonged to a local organization, or if real and symbolic barriers were present, territorial responsibility had little impact on police calls for crimes of violence. That is, only when other supports were lacking, did territorial attitudes become prepotent.

In addition, neighborhood-level identification, which in some respects may be interpreted as a territorial variable, performed much more powerfully than expected. Even when the variable was residualized with respect to other demographic and territorial variables, knowledge of the neighborhood name merited entry in several block-level regressions. Thus, territorial attitudes toward larger areas appear as important as attitudes toward spaces nearer home. Furthermore, we were able to connect local social processes with neighborhood identification. The development of local social ties was associated with increased likelihood of knowing the neighborhood name (Chapter 11).

E. Link 5: Defensible Space Features and Territorial Variables

One of the basic ideas of defensible space theory is that the mere establishment of particular design features will foster territorial attitudes and behaviors on the part of residents. And, although this pivotal notion originated with Newman (1972) and has been around for a while, it has not as yet been tested in the standard residential environment (see review in Chapter 1).

At the block level our results yielded some support for the suggestion that defensible space features are associated with stronger territorial functioning. For example, in our block-level model predicting problems, the path analysis showed that defensible space features significantly enhanced gardening in back and neighborhood identification.

At the individual level, we have some spotty results concerning a tie between defensible space features and territorial functioning. In the regressions (Chapter 5), no such connections appeared. There were, however, in other analyses some suggestions that residents and non-residents expect this connection to exist. In our projective task (Chapter 8) residents indicated that if a fence was present, the person living there probably looked after his/her property more, kept it up better, and was more vigilant. Some groups of non-residents also held similar expectations (Chapter 10). Planners indicated that if real and symbolic barriers were depicted, they expected residents would be more vigilant, would care more about their property, and that it would be a safer neighborhood.

Thus, at the individual level we have expectations that defensible space features are linked with territorial functioning, but no indication that, net of block functioning, things operate in this fashion. It may therefore be the case that people generalize from the block to the individuals living on it. If the block works a certain way, they expect individual variations within the block to work in the same fashion. Of course, this discrepancy between actual functioning and expectations is not perfectly clear, given that our research tasks were not specifically designed to tap into differences between block-level and individual-level functioning and expectations.

F. Link 6: Local Social Ties and Territorial Functioning

Analyses similar to the ANOVAs reported in Chapter 7 were carried out to address this linkage. Two aspects of local social ties were examined: proportion of acquaintances on the block who are friends, and number of addresses on block where the respondent knows, by face or name, someone who lives there. Respectively, these two variables correspond to "strong" and "weak" ties. These analyses yielded complex results, which we will just try to highlight here.

The presence of strong ties, i.e., a larger proportion of friends-to-acquaintances on the block, was associated with territorial attitudes in several respects. As strong ties increased, territorial problems decreased ($p < .05$). And strong ties were associated with larger differences, between home, near home, and off-block territories, in terms of ability to recognize insiders from strangers.

Weak ties, or simple acquaintanceship with people on the block, were also associated with territorial attitudes. The presence of weak ties was associated with better ability to distinguish between insiders and strangers.

Some results relevant to this link are also evident in the correlation matrices used for regression analyses (Chapter 5). At the block level: belonging to an organization with co-residents was associated with feeling more responsible for what happened in near-home spaces ($p < .05$, Table D-1); knowing more people by face or name on the block was associated with feeling more responsible for near-home spaces, and gardening more in back ($ps < .05$; see Table D-2); and trusting more in neighbors was associated with more gardening in back ($p < .05$; Table D-2). Thus, the expected linkage emerges when various aspects of social climate and territorial functioning are considered, suggesting that this linkage is fairly robust.

The tie between social networks and territorial attitudes also emerged when individual-level deviations from block means were examined. Belonging to an organization, relying on neighbors for property watching, and being acquainted with more people on the block were all associated with feeling more responsible for events in near home territories, and with an increased likelihood of knowing the neighborhood name. Thus, at both the block and the individual level local social ties are linked to territorial functioning.

There are, however, two limitations to our finding concerning this link. First, it could be a spurious correlation; that is, socioeconomic (SES) considerations may drive both local ties and territorial functioning. The ANOVAs, however, control for SES by examining territorial functioning in separate types of neighborhoods. And, contrary to the counterargument proposed, net of neighborhood characteristics (and thus net of SES), the social climate variables are related to territorial attitudes. This is not to deny that in some cases SES and social variables exerted a joint influence on territorial attitudes. But, social variables clearly do have their own separate influence, independent of context.

Second, it could be territorial functioning that is "driving" social ties. That is, causality could operate in the reverse fashion from what we expect. Since our data are cross-sectional and not longitudinal, we cannot, strictly speaking, address this limitation. But, in our open-ended data gathering none of our respondents, resident or non-resident, indicated that they expected this to happen.

G. Link 7: Homogeneity and Territorial Functioning

The impacts of perceived homogeneity on territorial functioning appear to occur largely at the individual level (Chapters 6 and 7). Most importantly, increased similarity was associated with lower levels of problems in near-home spaces.

Objective homogeneity, which was measured at the block level only, revealed only a minor association with territorial functioning. Blocks that were less diverse on owner vs. renter status also exhibited more gardening in back ($r = -.37$, $p < .05$).

Thus, given that homogeneity and territorial functioning are linked, what are the processes underlying this linkage? We offer the following suggestions. Perceived similarity is a function of both important demographics (e.g., owner vs. renter status), and inferences that co-residents are similar to the perceiver on critical "value" dimensions. These dimensions may include attitudes towards children's education, concern about neighborhood problems, attitudes about appropriate disciplinary action for children, attitudes towards home improvement, and so on. Concomitant with this judgement of perceived similarity are expectations, and actual experiences, that people will respect the property and rights of others. Therefore, people are more willing to put out displays such as flowers because they know they will be respected. And, one experiences fewer control-related outcomes because the block grouping as a whole is responding similarly to matters that deserve attention. The homogeneity facilitates recognition of who belongs and who does not. It is also associated with a more smoothly functioning social ecology, thereby encouraging people to take more responsibility for the events that occur.

Furthermore, a general point to keep in mind is that as homogeneity increases one feels more backed up by a reference group. That is, one probably feels less isolated, and also surer that others will agree with territorial actions taken. Thus, the fear or the expectation of retaliation will decrease. This may be a very important element in facilitating territorial control.

H. Link 8: Territorial Attitudes and Territorial Behaviors

The covariation of territorial attitudes and behaviors emerged from several components of the present study. It was apparent that these two sets of variables did cluster as expected, that residents expected this clustering, and that non-residents expected this association as well.

Controlling for neighborhood context, and therefore controlling for socio-economic considerations, we saw that territorial attitudes were significantly associated with territorial behaviors such as gardening in back, and that the strength of this link was invariant across neighborhood type (Chapter 10).

Several respondents in the abstract picture task indicated that the presence of planting was a cue that the residents in question cared about the property (Chapter 8). Thus, residents in the study areas make inferences in accordance with actual results.

Non-residents made such inferences as well (Chapter 10). Gardening was seen by raters of slides as a clue to residents who cared about the area and watched out. Planting also denoted safer, higher-income areas.

One important clue about the impacts of territorial behaviors came from the regression where we used attitudes to predict behaviors. One of the strongest attitudinal predictors was ability to distinguish insiders from outsiders. As one is out gardening, one is inevitably exposed to passers-by. Through such passive contacts (Festinger, Schachter, and Back, 1950), an ability to distinguish between groupings may occur.

It is also apparent that ownership status itself is intimately bound up with both territorial attitudes and territorial behaviors (see Chapter 8). In fact, owner status is a very good predictor of both of these.

I. Link 9: Homogeneity and Local Social Ties

One connection that we observed but did not expect was between homogeneity and local social ties. At the block level, increasing perceived homogeneity and increasing objective homogeneity on owner vs. renter status were associated with increased trust between neighbors, and increased likelihood of belonging to a local organization with co-residents. At the individual level increased perceived similarity is associated with knowing a greater proportion of people, by face or name, on the street. Our expectation is that all three of these elements are bound up in a process of system-like influence.

Results in Comparison to Some Other Recent Studies

At this point it is useful to see how our results compare and contrast with two recent major efforts in this area. The two empirical studies are the evaluation of the Hartford demonstration project by Fowler *et al.* (1979), and the study by Newman and Franck (1980) of factors influencing crime and instability in housing projects.

Our cross-sectional results support Fowler _et al_.'s longitudinal study in several respects. In both studies a link between defensible space features (in our study at the block level, in their study at the neighborhood level) and crime was found. In Fowler _et al_.'s study they found that defensible space changes were associated with better insider/outsider recognition. In our study we found an analogous but more general link between defensible space features and territorial functioning. The fact that our results match Fowler _et al_.'s in several respects is important for the following reason: their study was at the neighborhood level while ours was at the block level. This suggests that the conceptual tools we are using _may_ be powerful across a range of units of analysis.

Our study also supports Newman and Franck's (1980) in several respects. They found that territorial attitudes such as control of space, was important for predicting outcomes. Territorial attitudes in our study also played a major role in predicting crime-related outcomes. They found that defensible space features supported territorial attitudes. In our study we observed a similar covariation. Finally, they found that local social ties were bivalent -- heightening some crime-related outcomes and dampening others. This is also what we found at the individual level. The congruence between our findings and those of Newman and Franck is especially noteworthy since their study was carried out in housing projects, while ours was carried out in the standard residential environment.

CHAPTER 16

CLASSIFYING FINDINGS AND REMAINING QUESTIONS: AN EXAMINATION OF POLICY AND RESEARCH IMPLICATIONS

Introduction

In the last section we reviewed the findings of the study as they related to our major model. Therefore, for each link in the model we have a certain amount of evidence. Arranging our findings in such a way serves to clearly indicate the strength of each piece of our theoretical model.

In the present section we classify our results in a different fashion. We consider how each of our major results stacks up in terms of policy relevance and methodological strength. This arrangement then allows us to draw policy implications, starting with the most policy-relevant, and strongest findings.

We then turn to the questions which are not answered by our research. The remaining loopholes we organize in terms of theoretical relevance and policy relevance. This organization should assist in the development of focused and policy-relevant research directives.

Policy Implications

Table 1 classifies our major findings in terms of policy relevance, and methodological rigor. Starting with the upper right corner, we find our most robust, and potentially most useful findings.

Let us first consider defensible space features. In the present study, defensible space features in the form of real and symbolic barriers in front dampened crime, fear, and problems directly, and also indirectly dampened these crime-related outcomes via a strengthening of territorial functioning. These findings suggest several policy implications. First, starting at a fairly simple level, neighborhood organizers or leaders, or planners, could assess the extensiveness of real and symbolic barriers on various blocks. The information resulting from such an environmental assessment could then be used in processes of resource allocation, or identification of areas at risk due to crime, fear, or problems. Such an environmental assessment could be carried out in less time and with less effort than, say, a survey to determine resident characteristics. We readily grant, however, that such an assessment of real and symbolic barriers is likely to be most useful for assessing intra-neighborhood variation in homogeneous areas. That is, the assessment is likely to be most useful as a diagnostic technique where the blocks assessed are fairly equal on <u>other</u> dimensions. This condition is most likely to obtain in homogeneous neighborhoods. Nonetheless, this limitation notwithstanding, such an assessment procedure may prove cost effective for several purposes, in many locales.

Second, real and symbolic barriers may serve as a focus for community or block rehabilitation or beautification efforts. In instances where state-funded or federally-funded programs allow a neighborhood organization to provide labor for home improvement, such assistance might be allowed for exterior improvements such as the erection of real and symbolic barriers. Of course, maintenance of the primary dwelling unit would obviously take precedence over the improvement of exterior spaces. But, in instances where the basic domicile is in good condition, a focus on the improvement of exterior spaces would certainly be justifiable.

Thirdly and finally, our findings concerning real and symbolic barriers have policy implications for the reconstruction or rehabilitation of urban residential areas. In instances where new units are being constructed, attention should be given to the allocation and demarcation of outdoor space attached to each unit. In instances where sidewalk or yards are being rehabilitated around or with a rehabilitated housing unit, attention might be given to the use of varying materials or symbolic barriers which would clearly allocate existing semi-public spaces to particular dwelling units.

These three policy implications are doubly important in that they are relevant to "ultimate" outcomes such as crime and fear, as well as the intervening process of territorial functioning.

Turning to local social ties, at the block level we saw that stronger networks were an unqualified good. They dampened crime-related outcomes directly, and indirectly via a strengthening of territorial functioning. The two relevant social components at the block level were belonging to an organization with co-residents, and being acquainted with a greater proportion of people on the block.

Perhaps the most important policy implication of such findings is that they support community development approaches to crime prevention. That is, programs which seek to reduce crime or fear by having people get to know one another, would appear to be on the right track. There is, however, a caveat to this implication. Local ties appear to be more useful, or more easily developed, on blocks where threat is lower. In higher-threat areas, co-residents appear to be viewed with more suspicion. Thus, programs which seek to develop local ties may have differential utility depending on the level of threat in the area. Nonetheless, despite this limitation, it would still seem worthwhile to support community development programs which seek to foster stronger bonds between neighbors, for the purposes of reducing crime or other problems.

A second implication is that where the social ecology is known on various blocks in a neighborhood by a local leader, such information can be used to predict troublesome blocks, which lack social cohesion, and might therefore be crime- or problem-prone. Such information could be used as a diagnostic tool, to help focus neighborhood development efforts, or organizational drives. In other words, information about the social ecology may be valuable for a number of local purposes.

Turning to territorial functioning, we saw that this was a dampener of crime related outcomes at the block and individual level. Therefore, the most major policy implication is that residents should be encouraged to exercise jurisdiction over near home spaces such as sidewalk in front of the house, or alley behind the house. This could be accomplished in any number of ways. At the simplest level people could be encouraged, through flyers or through meetings on the topic, to be aware of events in near home spaces, and report them if necessary. At a more sophisticated level homeowners or renters could be "deeded" certain responsibilities regarding the sidewalks and alleys. For example, there could be a mortgage or a lease clause which stipulates that the resident shall look after the sidewalk and alley immediately adjacent. (In case of the homeowner such responsibility actually does come into play after a snowfall, when, by law, the walk must be shoveled so many hours after the storm.) An example of such an arrangement on a larger scale can be found in the "private" streets of St. Louis, discussed by Newman (1979), where the entire street is deeded over to a resident group. Thus, such contracts are feasible, and may prove effective. Of course, it may be very difficult, in high threat areas, to draw people out of their enclaves, and to actually get them to adopt an expanded sense of responsibility. For many, the home has been the limit of their power and the frame of their security for quite some time (Rainwater, 1966). Nonetheless, our results suggest that arrangements for expanded responsibility can and should be encouraged, as a block- and individual-level deterrent to crime and fear.

Moving to findings at the "medium" level of policy relevance, we consider our finding that, for residents and non-residents alike, aesthetic appearance and perception of safety are intertwined. Places that are better kept up and more extensively decorated or beautified, are judged to be safer areas. This finding suggests several policy implications. First, in the design of new residential or even business settings, outside spaces should be designed so that they are easily kept clean and litter-free. Second, residents themselves should be encouraged to keep up and beautify their streets. In Baltimore, the yearly clean block contest, sponsored by the Afro-Am newspaper, is an example of such a program. Many blocks in West Baltimore clean up and spruce up their fronts for this competition, and the result is a good number of pleasing and festive blocks, where people probably feel safer.

Finally, two less-specific policy implications may be drawn from our findings. First, crime prevention programs should be tailored to the level of threat experienced by residents. We found, for example, that in high threat areas residents appear much less trusting of co-residents. This has implications for the development of crime prevention programs (e.g., eyes on the street) which rely in part upon inter-neighbor cooperation. Thus, an a priori assessment of threat level, and of neighbor-to-neighbor attitudes might result in more focused, and more effective crime prevention programs. Second, our results suggest that programs whose focus is specifically on fear might be developed in addition to (not instead of) programs that focus on crime prevention. Our results suggested that although the same <u>concepts</u> are relevant to fear as are relevant to crime, in some instances the relevant variables are different. And, the zero order correlation between crime and fear is fairly low. Such findings would seem to support the suggestion of Garafalo and Laub (1978) that "fear of crime" is more than fear of crime, and that it includes a healthy dose of community concern.

To re-iterate, such fear reduction programs should be undertaken in tandem with crime prevention programs. Fear of crime is undoubtedly part of "fear of crime," although how big a part we don't know. Thus, crime prevention will result in some fear reduction, although how much we don't know. The point is, however, that fear is a problem in and of itself, and thus deserves to be tackled head-on.

Research Implications

Of course the most significant research implication of the present study is that the major model we have tested has received empirical support. The relevance of defensible space features, local social ties, and territorial functioning to crime-related outcomes has been established. Therefore these concepts deserve continued attention in models that investigate informal control in the urban residential environment.

The research questions which still remain now that our study is completed are arrayed in Table 2 in terms of policy relevance and theoretical relevance. Questions 1 and 2 describe the remaining gap that is most theoretically and policy relevant. Our present model treated fear, crime, and problems as outcomes. But, the possibility remains that we could have achieved greater explanatory power had we given these crime-related outcomes a different causal treatment. For example, we could assume that crime-related outcomes have a bi-directional relationship with local social ties and territorial functioning, influencing them, but at the same time being influenced by them.

The question of the causal status of fear and crime could be approached in a number of different ways. First, a large cross-sectional data set containing the relevant variables could be assessed using non-recursive causal analysis, which assumes bi-directional causal paths. Second, blocks in neighborhoods that are experiencing changing crime and fear levels could be examined over a period of time. For example, a quarterly assessment could be made over a two year period. The data could then be subjected to causal analysis, time series analysis, or analysis of covariance. Examples of such changing areas would be gentrifying, revitalizing, or declining neighborhoods. However it is accomplished, we feel that the further investigation of possible causal roles of fear and crime is critical.

A somewhat less policy-relevant but theoretically crucial issue is the nature of the relationship between individuals and the block they live on (Questions 3,4). Do blocks "shape" the people that move onto them, influencing attitudes so that they fit the prevailing climate? Or is block climate a simple sum of the characteristics of people who are living there? Or, does the nature of the relationship between individuals and their block depend upon the stage of the block's life cycle? In a newly built, evolving, or transition block, block climate may be a simple sum of constituent individuals. But, in mature blocks, or those approaching old age, the prevailing climate may exert a powerful influence on residents. Practically, it would be important to understand these dynamics so that intervention or prevention programs could be focused in the most cost-effective fashion. Theoretically, understanding these issues is also important because it will lead to the development, testing, and verification of cross-level theories of informal control. Such understanding is critical in the development of complete models of the urban residential environment.

Also relevant to the issue of developing wholistic models is the question of context effects (Question 5). In the present study our attempts to incorporate contextual influences had two results. First, socio-demographics played complex roles, sometimes functioning as bivalent predictors. Second, amount of local threat was associated with different attitudes toward co-residents. Thus, we have verified that sociocultural context is indeed relevant to informal control processes. Theoretically, however, we need to develop models to explain and describe these influences of context. These influences, as we have already revealed, are complex, and sizable enough to deserve attention. Such understanding would help fine-tune crime and fear prevention programs, suiting them better to the locale. Thus, it would be quite policy relevant.

Equally policy relevant is the question (#6) of offenders' perceptions of defensible space features. Our results have revealed a direct impact of real and symbolic barriers on crime-related outcomes. And, we suspect that this influence is actually mediated by the perceptions of these features by offenders and potential offenders. We would suggest a policy-capturing approach (cf. Craik and Appleyard, 1980) to this issue. That is, judgements by individual offenders (or potential offenders) of households or streetfronts could be correlated with ratings of physical features, and with actual outcomes (crime, and fear levels). Such an investigation would be policy relevant because it could help further narrow our understanding of <u>which</u> particular physical feaatures are important. Theoretically, such an assessment would also be crucial. Perception of defensible space features by potential offenders is one of the major, and as-yet-untested assumptions of defensible space theory.

An area somewhat less crucial to policy but nonetheless deserving of attention are the relationships between physical, social, and territorial elements in the residential environment (Question 7). We saw evidence of these complex inter-relationships in the significant joint influence of pairs of variables, in one of our step-wise regressions. Thesé sets of variables (defensible space, social, territorial) interlock and it is important to understand how this occurs, and what the consequences are.

Table 1

Classification of Major Findings

Policy Relevance	Methodological Strength: Low	Medium	High
High			1. Defensible space features reduce police activity, fear, and problems. 2. Social networks reduce police activity, and fear. 3. Territorial functioning reduces crime, fear, and problems. 4. Real and symbolic barriers appear to be most relevant defensible space features. 5. Defensible space features support territorial functioning. 6. Social networks support territorial functioning.
Medium		11. Same concepts may predict crime and fear, but actual variables may differ. 12. Views towards co-residents vary depending upon level of local threat. 13. Aesthetic appearance and perception of safety are intertwined.	7. At individual level, social networks may be bivalent. 8. Territorial attitudes and territorial behaviors are intertwined.
Low	14. Perceived and objective homogeneity increase as strength of local social ties increases.		9. At individual-level particular components of social climate have differing impacts on crime-related outcomes.

Table 2

Questions to be addressed by future research

Policy Relevance	Low	Medium	High
High		5. How do informal control processes operate differently depending upon the amount of local threat, or other socio-demographics? 6. How do offenders and potential offenders "read" physical features in the environment?	1. Do fear and crime operate primarily as consequences of social climate and territorial functioning? 2. Do fear and crime have bi-directional relationships with territorial functioning and the operation of local social ties?
Medium		7. How are physical, social and territorial variables inter-related?	3. How is individual-level networking and territorial functioning related to these same processes at the block level? 4. How do people who move in get incorporated into block-level dynamics?
Low			

Theoretical Relevance

References

Alexander, K.L., Cook, M., & McDill, E.L. Curriculum teaching and educational stratification: Some further evidence. American Sociological Review, 1978, 43, 47-66.

Alexander, K.L., & Eckland, B.K. School experience and status attainment. In S.D. Dragastin and G.H. Elder (Eds.). Adolescence in the Life Cycle: Psychological Change and the Social Context. Washington, D.C.: Hemisphere, 1975.

Alexander, K.L., & McDill, E.L. Selection and allocation within schools: Some causes and consequences of curriculum placement. American Sociological Review, 1976, 41, 963-980.

Alker, H.R. A typology of ecological fallacies. In M. Dogan & S. Rokan (Eds.). Quantitative Ecological Analysis in the Social Sciences. Cambridge: MIT Press, 1969.

Allison, P. Texting for interaction in multiple regression. American Journal of Sociology, 1977, 83, 144-153.

Altman, I. The Environment and Social Behavior. Monterey, CA: Brooks/Cole, 1975.

Altman, I., Taylor, D.A., & Wheeler, L. Ecological aspects of group behavior in social isolation. Journal of Applied Social Psychology, 1971, 1, 76-100.

Alwin, D.F., & Hauser, R.M. The Decomposition of effects in path analysis. American Sociological Review, 1975, 40, 37-47.

Appleyard, D. Notes on urban perception and knowledge. In R. Downs and D. Stea (Eds.). Image and Environment. Chicago: Aldine, 1973.

Appleyard, D. Livable Urban Streets: Managing Auto Traffic in Neighborhoods. Washington: U.S. GPO, 1976.

Ardrey, R. The Territorial Imperative. New York: Atheneum, 1966.

Ardrey, R. The Social Contract. New York: Dell, 1970.

Baltimore City Planning Commission. Community Association Directory. Baltimore: 1978 (4th edition).

Bakker, C., & Bakker-Rabdau. No Trespassing!: Explorations in Human Territoriality. San Francisco: Chandler and Sharp, 1973.

Barker, R.G. Ecological Psychology. Stanford, CA: Stanford University, 1968.

Barker, R.G. The Stream of behavior as an empirical problem. In R.G. Barker (Ed.). The Stream of Behavior: Exploration of its Structure and Context. New York: Appleton-Century-Crofts, 1963.

Barker, R.G., & Wright, H.F. One Boy's Day. New York: Harper and Row, 1951.

Baron, R.A., & Ransberger, V.M. Ambient temperature and the occurrence of collective violence. Journal of Personality and Social Psychology, 1978, 36, 351-360.

Baum, A., Davis, G.E., & Aiello, J.R. Crowding and neighborhood mediation of urban density. Journal of Population, 1978, 1, 266-279.

Baum, A., Harpin, D., & Valins, S. The role of group phenomena in the experience of crowding. Environment and Behavior, 1975, 7, 185-198.

Baum, A., Shapiro, A., Murray, D., & Wideman, M.V. Interpersonal mediation of perceived crowding and control in residential dyads and triads. Journal of Applied Social Psychology, 1979, 9, 491-507.

Baum, A., & Valins, S. Architecture and Social Behavior: Psychological Studies of Social Density. Hillsdale, N.J.: Erlbaum, 1977.

Bersheid, E., & Walster, E.H. Interpersonal Attraction. Reading, MA: Addison-Wesley, 1978.

Bevis, C., & Nutter, J.B. Changing street layouts to reduce residential burglary. In Frisbie, D. et al. Crime in Minneapolis. Minneapolis: Minnesota Crime Prevention Center, 1978.

Blalock, H.M., Jr., Causal Inferences in Non-Experimental Research. Chapel Hill: University of North Carolina Press, 1964.

Blalock, H.M. Correlated independent variables: The Problem of multicollinearity. Social Forces, 1963, 43, 233-237.

Brantingham, P.J., & Brantingham, P.L. A theoretical model of crime-site selection. In M.D. Krohn and R.L. Akers (Eds.). Crime, Law, and Sanctions: Theoretical Perspectives. Beverly Hills: Sage, 1978.

Brenner, H. Testimony for hearings before the Subcommittee on Crime of the Committee on the Judiciary, House of Representatives. Unemployment and Crime. Washington: U.S. GPO, 1978.

Brenner, H. Mental Illness and the Economy. Cambridge, MA: Harvard University Press, 1973.

Broady, M. Social Theory in architectural design. In R. Gutman (Ed.). People and Buildings. Basic Books: New York, 1972.

Brower, S.N. Territoriality, the exterior spaces, the signs we learn to read. Landscape, 1965, 15, 9-12.

Brower, S. The design of neighborhood parks. JSAS Catalog of Selected Documents in Psychology, 1979, 9, 29, MS. 1843.

Brower, S.N. Territory in the urban environment. In I. Altman, A. Rapoport, and J. Wohlwill (Eds.). Behavior and Environment. New York: Plenum, 1980.

Brower, S., Stough, R.R., Headley, B., & Gray, L. The design of open space for residential management. In P. Suedfeld and J.A. Russel (Eds.). The Behavioral Basis of Design, I. Stroudsburg, PA: Dowden, Hutchinson and Ross, Inc., 1976.

Brower, S., & Williamson, P. Outdoor recreation as a function of the urban housing environment. Environment and Behavior, 1974, 6, 295-345.

Brown, B.B. Territoriality and residential burglary. Paper presented at the American Psychological Association, New York City, September, 1979.

Buss, A.R. The Trait-Situation controversey and the concept of interaction. Personality and Social Psychology Bulletin, 1977, 3, 196-201.

Capone, D.L., & Nichols, W.W. Urban structure and criminal mobility. American Behavioral Scientist, 1976, 20, 199-213.

Clarke, R.V.G. Defensible space and vandalism: The lessons from some recent British Studies. In Städtebau and Kriminalant (Urban Planning and Crime): Paper of an International Symposium, Bundeskriminalant, Federal Republic of Germany, 1978.

Clarren & Schwartz. In W. Skogan (Ed.) Sample Surveys and the Victims of Crime. Cambridge, MA: Ballinger, 1976.

Cloward, R.A. & Ohlin, L.E. Delinquency and Opportunity. New York: Free Press, 1960.

Cohen, J., & Cohen, P. Applied Multiple Regression/Correlation Analysis in the Behavioral Sciences. Hillsdale, NJ: Erlbaum, 1975.

Cohen, E.S., Kidder, L.H., & Harvey, J. Crime prevention vs. victimization prevention: The psychology of two different reactions. Victimology: An International Journal, 1978, 3, 285-296.

Coleman, J.S., Campbell, E.Q., Hobson, C.J., McPartland, J., Mood, A.M., Weinfeld, F.D., & York, R.L. Equality of Educational Opportunity. Washington: US. GPO, 1966.

Conroy, J., & Sundstrom, E. Territorial dominance in a dyadic conversation as a function of similarity of opinion. Journal of Personality and Social Psychology, 1977, 35, 570-576.

Craik, K., & Appleyard, D. Streets of San Francisco: Brunswick's Lens Model applied to urban inference and assessment. Journal of Social Issues, 1980, 36, 72-85.

Crenson, M.A. Social networks and political processes in urban neighborhoods. American Journal of Political Science, 1978, 22, 578-594.

Cronbach, L.J. Research on classrooms and schools: Formulation of questions, design, and analysis. Occasional Paper, Stanford Evaluation Consortium, Stanford University. Stanford, CA, 1976.

Dahir, G. The neighborhood unit plan: Its spread and acceptance. New York: Russel Sage, 1947.

DeSoto, C.B. The predilection for single orderings. Journal of Abnormal and Social Psychology, 1960, 60, 417-421.

DeSoto, C.B., & Albrecht, F. Cognition and social orderings. In R.P. Abelson et al. (Eds.) Theories of Cognitive Consistency. New York: Rand-McNally, 1968.

Downs, R., & Stea, D. Maps in Minds. New York: Harper and Row, 1977.

Dubow, A.F., McCabe, E., & Kaplan, G. Reactions to Crime: A Critical Review of the Literature.

Ebbesen, E.G., Kjos, G.L., & Konecni, V.J. Spatial Ecology: Its effects on the choices of friends and enemies. Journal of Experimental Social Psychology, 1976, 12, 505-518.

Edney, J.J. Property, possession, and permanence: a field study of human territoriality. Journal of Applied Social Psychology, 1972, 2, 275-282.

Edney, J.J. Human territoriality. Psychological Bulletin, 1974, 81, 959-975.

Edney, J.J. Territoriality and control: a field experiment. Journal of Personality and Social Psychology, 1975, 31, 1108-1115.

Edney, J.J. Human territoriality: comment on functional properties. Environment and Behavior, 1976a, 8, 31-47.

Edney, J.J. The psychological role of property rights in human behavior. Environment and Planning A, 1976, 8, 811-822.

Esser, A.H., Chamberlain, A.S., Chapple, E.D., & Kline, N.S. Territoriality of patients on a reserach ward. In J . Wortis (Ed.), Recent Advances in Biological Psychiatry, 1965, 7, 36-44.

Evans, S.H., & Anastasio, E.J. Misuse of analysis of covariance when treatment effect and covariate are confounded. Psychological Bulletin, 1968, 69, 225-234.

Farkas, G. Specification, residuals, and contextual effects. Sociological Methods and Research, 1974, 2, 333-364.

Federal Bureau of Investigation. Uniform Crime Reporting Handbook. Washington: FBI, 1978.

Festinger, L. A theory of Social Comparison Processes. Human Relations, 1954, 7, 117-140.

Festinger, L., Schachter, S., & Back, K. Social Pressures in Informal Groups. Stanford, Calif.: Stanford University Press, 1950.

Firey, W. Sentiment and symbolism as ecological variables. American Sociological Review, 1945, 10, 140-148.

Fowler, F.J., McCalla, M.E., & Mangione, T.W. Reducing Residential Crime and Fear: The Hartford Neighborhood Crime Prevention Program. Washington: U.S. GPO, 1979.

Franck, K.A. Exorcising the ghost of physical determinism. Unpublished Manuscript. Institute for Community Design Analysis, December 1979.

Frisbie, D. Crime in Minneapolis. Minneapolis: Minnesota Crime Prevention Center, 1978.

Gans, H.H. The Levittowners, NY: Pantheon, 1967.

Gans, H.J. Urban vitality and the fallacy of physical determinism. In H.J. Gans, People and Plans. New York: Basic Books, 1968.

Gans, H.J. Planning and social life: Friendship and neighbor relations in suburban communities. In H.M. Proshansky. W.H. Ittelson, & L.G. Rivlin (Eds.) Environmental Psychology, New York: Holt, Rhinehart, & Winston, 1970.

Gardiner, R.A. Design for Safe Neighborhoods. Washington: U.S. GPO, 1978.

Garofalo, J., & Laub, J. The Fear of Crime: Broadening our Perspective. Victimology: An International Journal, 1978, 3, 242-253.

Gerson, K., Steuve, C.A., & Fischer, C.S. Attachment to place. In Fischer, C.S., et al., Networks and Places: Social relations in the urban setting. New York: Free Press, 1977.

Gordon, R.A. Issues in the ecological study of delinquency. American Sociological Review, 1967, 32, 927-944.

Gordon, R.A. Issues in multiple regression. American Journal of Sociology, 1968, 73, 592-616.

Gottfredson, G.D. Models and muddles: an ecological examination of high-school crime rates. Journal of Research in Crime and Delinquency, 1979, 16, 307-331.

Granovetter, M. The strength of weak ties. American Journal of Sociology, 1973, 78, 1360-1380.

Granovetter, M. Getting a Job. Cambridge, MA: Harvard University Press, 1974.

Haitovsky, Y. Multicollinearity in regression analysis. The Review of Economics and Statistics, 1969, 51, 486-499.

Haney, W.G., & Knowles, E.S. Perception of neighborhoods by city and suburban residents. Human Ecology, 1978, 6, 201-214.

Hannan, M.T. Problems of Aggregation. In H.M. Blalock (Ed.) Causal Models in the Social Sciences. Chicago: Aldine, 1971a.

Hannan, M.T. Aggregation and Disaggregation in Sociology. Lexington, Mass.: Lexington Books, 1971b.

Harries, K.D. The Geography of Crime and Justice. New York: McGraw Hill, 1974.

Hauser, R.M. Context and consex: a cautionary tale. American Journal of Sociology, 1970, 645-664.

Hays, W.L. Statistics for the Social Sciences. New York: Holt, 1973.

Heald, K.A. Designing safe environments: III. Testing procedures. Unpublished manuscript, 1978.

Heider, F. The Psychology of Interpersonal Relations. New York: Wiley, 1958.

Heise, D.R. Problems in path analysis and causal inference. In E.F. Borgatta & G.W. Bohrnstedt (Eds.). Sociological Methodology 1969. San Francisco: Jossey-Bass, 1968.

Heise, D.R. Employing nominal variable, induced variables, and block variables in path analyses. Sociological Methods and Research, 1972, 1, 147-173.

Heise, D.R. Causal Analysis. New York: Wiley, 1975.

Hillier, B. In defense of space. RIBA Journal, 1973, 539-544.

Hirschi, T., & Gottfredson, M. (Eds.) Understanding Crime: Theory and Fact in Contemporary Criminology. Beverly Hills: Sage, 1980.

Homans, G. The Human Group. New York: Harcourt, Brace, and World, 1950.

Hunter, A. Symbolic communities: the persistence and change of Chicago's local communities. Chicago: University of Chicago Press, 1974.

Hunter, A. The loss of community: An empirical test through replication. American Sociological Review, 1975, 40, 537-552.

Hunter, A. Symbols of incivility: social disorder and fear of crime in urban neighborhoods. Paper presented at the annual meeting of the American Society of Criminology, Dallas, 1978.

Hunter, A., & Suttles, G.D. The expanding community of limited liability. In Suttles, The Social Construction of Communities. Chicago: University of Chicago Press, 1972.

Hutt, S.J., & Hutt, C.H. Direct Observation and Measurement of Behavior. Springfield, IL: Charles C. Thomas, 1970.

Institute for Community Design Analysis. Measuring the Effectiveness of Project Modifications: A Test of Defensible Space Hypotheses. Unpublished manuscript, 1974.

Isaacs, R.R. The neighborhood theory: An analysis of its adequacy. Journal of the American Institute of Planners, 1948, 14, 15-23.

Ittelson, W.H., Proshansky, H.M., & Rivlin, L.G. A study of bedroom use on two psyciatric wards. Hospital and Community Psychiatry, 1970a, 21, 177-180.

Ittelson, W.H., Proshansky, H.M., & Rivlin, L.G. Bedroom size and social interaction on the psychiatric ward. Environment and Behavior, 1970b, 2, 255-266.

Ittelson, W.H., Rivlin, L.G., & Proshansky, H.M. The use of behavorial maps in environmental psychology. In H.M. Proshansky, W.H. Ittelson, and L.G. Rivlin, (Eds.) Environmental Psychology: Man and his Physical Setting. New York: Holt, Rinehart, and Winston, 1970.

Jackson, R.M., Fischer, C.S., & Jones, L.M. The dimensions of social networks. In Fischer, C.S., et.al., Networks and Places, New York: Free Press, 1977.

Jacobs, J. The Death and Life of Great American Cities. New York: Vintage, 1961.

Keller, S. The Urban Neighborhood: A Sociological Perspective. New York: Random House, 1968.

Kelly, G.A. A Theory of Personality: The Psychology of Personal Constructs. New York: Norton, 1955.

Kerlinger, F.N., & Pedhazor, E.J. Multiple Regression in Behavioral Research. New York: Holt, 1973.

Kish, L. A procedure for objective respondent selection within the household. Journal of the American Statistical Association, 1949, 380-387.

Kleinman, P. & David, D. Victimization and perception of crime in a ghetto community. Criminology, 1973, 11, 307-343.

Kmenta, J. Elements of Econometrics. New York: Macmillan, 1971.

Knapp, T.R. The unit of analysis problem in applications of simple correlation analysis to educational research. Journal of Educational Statistics, 1977, 2, 171-186.

Kohn, I.R., Franck, K.A., & Fox, A.S. Defensible space modifications in row-house communities. New York: Institute for Community Design Analysis, 1975.

Land, K.L. Principles of path analysis. In E.F. Borgatta and G.W. Bohrnstedt (Eds.). Sociological Methodology 1969. San Francisco: Jossey-Bass, 1968.

Lander B. Toward an Understanding of Juvenile Delinquency. New York: Columbia University Press, 1954.

Lavrakas, P.J., Normoyle, J., & Wagener, J.J. CPTED Commercial demonstration evaluation report (Draft). Evanston, IL: Westinghouse Electric Corporation, 1978.

Lavrakas, P.J., Normoyle, J., & Szoc, R. Commercial security surveys and burglary reduction: A time-series analysis. Paper presented at the Second National Workshop on Criminal Justice Evaluation. Washington, November, 1978.

Lazarus, R.S., & Cohen, J.B. Environmental stress. In I. Altman and J. Wohwill (Eds.). Behavior and Environment: (Volume 2). Advances in Theory and Research. New York: Plenum, 1977.

Lee, T.R. Urban neighborhood as a socio-spatial schema. In H. Proshansky, W. Ittleson, and G. Rivlin (Eds.), Environmental Psychology. New York: Holt, Rinehart, and Winston, 1970.

Levin, J. Three-mode factor analysis. Psychological Bulletin, 1965, 64, 442-452.

Levin, K. Field Theory in Social Science. New York: Harper, 1951.

Lewis, D.A., & Maxfield, M.G. Fear in the neighborhoods: an investigation of the impact of crime. Journal of Research in Crime and Delinquency, in press, 1980.

McGrew, W.C. An Ethological Study of Children's Behavior. New York: Academic Press, 1972.

McNemar, Q. Psychological Statistics. New York: Wiley, 1968

Maddala, G.S. Econometrics. New York: McGraw-Hill, 1977.

Mann, P.J. The neighborhood. In R. Gutman and D. Popenoe (Eds.), Neighborhood, city, and metropolis. New York: Random House, 1970.

Mawby, R.I. Defensible space: A theoretical and empirical appraisal. Urban Studies, 1977, 14, 169-179.

Mayhew, P. Defensible space: The current status of a crime prevention theory. Heward Journal of Penology and Crime Prevention, 1979, 18, 150-159.

Mayhew, P., Clarke, R.V.G., Burrows, J.N., Hough, J.M., & Winchester, S.W.C. Crime in Public View. London: Her Majesty's Stationary Office, 1979.

Merton, R.K., Social Theory and Social Structure. New York: Free Press, 1957.

Michelson, W. Man and His Urban Environment. Reading, MA: Addison-Wesley, 1970.

Miller, M.K., & Stokes, C.S. Path analysis in sociological research. Rural Sociology, 1975, 40, 193-201.

Mitchell, J.C. The concept and use of social networks. In J.C. Mitchell (Ed.) Social Networks in Urban Situations. Manchester: University of Manchester Press, 1969.

Mumford, L. Neighborhood and neighborhood unit. In L. Mumford (Ed.), The Urban Prospect. New York: Harcourt, 1956.

Newcomb, T.M. The Acquaintance Process. New York: Holt, Rhinehart and Winston, 1961.

Newman, O. Defensible space: Crime prevention through urban design. New York: MacMillan, 1973a.

Newman, O. Architectural Design for Crime Prevention. Washington, D.C.: U.S. GPO, 1973b.

Newman, O. Design Guidelines for Creating Defensible Space. Washington: U.S. GPO, 1975.

Newman, O. Community of Interest. New York: Doubleday, 1979.

Newman, O. & Franck, K. Community and Instability. Washington: U.S. GPO, 1980.

Pablant, D. & Baxter, J.C. Environmental correlates of school vandalism. Journal of the American Institute of Planners, 1975, 270-277.

Page, E.B. Statistically recapturing the richness within the classr... Psychology in the Schools, 1975, 12, 339-344.

Patterson, A.H. Territorial behavior and fear of crime in the elderly. Environmental Psychology and Nonverbal Behavior. 1978, 2, 131-144.

Patterson, A.H. Methodological developments in environment-behavioral research. In D. Stokols (Ed.) Perspectives on Environment and Behavior. Monterey: Brooks/Cole, 1977.

Perlmuter, L.C. Personal Communication, 1981.

Perry, C.A. The neighborhood unit. Regional Plan of New York and Its Environs, 1929, 7, 22-149.

Platt, G. Strong interfence. In G. Platt (Ed.) The Step to Man. New York: Wiley, 1966.

Price, R.H., & Bouffard, D.L. Behavioral appropriateness and situational constraint as dimensions of social behavior. Journal of Personality and Social Psychology, 1974, 30, 579-586.

Proshansky, H.M. Environmental Psychology and the real world. American Psychologist, 1976, 31, 303-310.

Rapoport, A. Human Aspects of Urban Form. New York: Pergamon, 1977.

Rivlin, L.G. Integrated use of individual and grouped data in field research. Paper presented at the annual meeting of the American Psychological Association. Toronto, August 1978.

Robinson, W.S. Ecological correlations and the behaviors of individuals. American Sociological Review, 1950, 15, 351-357.

Rockwell, R.C. Assessment of multicollinearity: The Haitovsky test of the determinant. Sociological Methods and Research, 1975, 3, 308-320.

Roncek, D.W. Dangerous places: Crime and the residential environment. Social Forces, in press, 1980.

Rosenberg, M. Society and the Adolescent Self-Image. Princeton: Princeton University Press, 1972.

Rosenberg, M. The Dissonant context and the adolescent self-image. In S.E. Dragastin and G.H. Elder (Eds.). Adolescence in the Life Cycle: Psychological Change and the Social Context. Washington: Hemisphere, 1975.

Ross, H.L. The local community: A survey approach. American Sociological Review, 1962, 37, 75-84.

Rouse, W.V. & Rubinstein, H. Crime in Public Housing: A Review of Major Issues and Selected Crime Reduction Strategies, Volume I. Washington: U.S. GPO, 1978.

Schleflen, A.E. Living space in an urban ghetto. Family Process, 1971, 10, 429-450.

Scheuch, E.K. Social context and individual behavior. In M. Dogan and S. Rokkan (Eds). Quantitative Ecological Analysis in the Social Sciences.

Shaw, C., & McKay, H.D. Juvenile Delinquency and Urban Areas. Chicago: University of Chicago Press, 1942.

Skinner, B.G. Science and Human Behavior. New York: Free Press, 1957.

Skogan, W.G. The Center for Urban Affairs Random Digit Dialing Telephone Survey. Unpublished manuscript. Evanston, IL: Northwestern University, 1978.

Slatin, G.T. Aggregation effects: Ecological analysis of delinquency. American Society Review, 1969, 34, 894-907.

Sommer, R. Design Awareness. Corte Madera, CA: Rhinehart, 1972.

Stanley, J.C. Reliability. In R.L. Thorndike (Ed.). Educational Measurement, 1971.

Stea, D. Home range and use of space. In L.A. Pastalan and D.H. Carson (Eds.) Spatial Behavior and Older People. Ann Arbor, MI: University of Michigan Press, 1970.

Stokols, D. The experience of crowding in primary and secondary environments. Environment and Behavior, 1976, 8, 49-86.

Stokols, D. Origins and directions of environment-behavioral research. In D. Stokols (Ed.) Perspectives on Environment and Behavior. New York: Plenum, 1977.

Stokols, D., and Shumaker, S.A. People in Places: A transactional view of settings. In J. Harvey (Ed.) Cognition, Social Behavior, and the Enviornment. Hillsdale, NJ: Erlbaum, 1980.

Stokols, D., Stokols, J., Novaco, R., & Campbell, J. Traffic Congestion, Type A behavior and Stress. Journal of Applied Psychology, 1978, 63, 467-480.

Studer, R.G. The dynamics of behavior-contingent physical systems. In H.M. Proshansky, W.H. Ittelsen, and L.G. Rivlin (Eds.) Environmental Psychology. New York: Holt, 1970.

Sudman, S. Applied Sampling. New York: Academic Press, 1976.

Sundstrom, E. Interpersonal behavior and the physical environment. In Wrightsman, L. Social Psychology, Monterey, CA: Brooks/Cole, 1977.

Sundstrom, E.S., & Altman, I. Field study of dominance and territoral behavior. Journal of Personality and Social Psychology, 1974, 30, 115-125.

Suttles, G.D. The Social Order of the Slum. Chicago: University of Chicago Press, 1968.

Suttles, G.D. The Social Construction of Communities. Chicago: University of Chicago Press, 1972.

Tannenbaum, G. The neighborhod: A socio-psychological analysis. Land Economics, 1948, 24, 358-369.

Taylor, R.B. Territorial cognitions and the structure of centrality. Paper presented at the annual meeting of the Eastern Psychological Association, Boston, April 1977.

Taylor, R.B. Human territoriality: A review and a model for future research. Cornell Journal of Social Relations, 1978, 13, 125-151.

Taylor, R.B., & Brooks, D.K. Temporary territories: responses to intrusions in a public setting. Population and Environment, 1980, 3, 135-145.

Taylor, R.B., Brower, S., & Drain, W. Toward a Neighborhood-Based Data File: Baltimore. Occasional paper, Baltimore, MD: Center for Metropolitan Planning and Research, Johns Hopkins University, October 1979.

Taylor, R.B., Brower, S., & Stough, R. User-generated visual features as signs in the urban residential environment. In P. Suedfeld and J.A. Russel (Eds.), The Behavioral Basis of Design, 1, Stroudsburg, PA: Dowden, Hutchinson and Ross, 1976.

Taylor, R.B., Gottfredson, S.D., & Brower, S. The Defensibility of defensible space. In T. Hirschi and M. Gottfredson (Eds.) Understanding Crime. Beverly Hills: Sage, 1980.

Taylor, R.B., Gottfredson, S.D., Brower, S., Drain, W., and Dockett, K. Toward a resident-based model of community crime prevention: urban territoriality, social networks, and design. JSAS Catalog of Selected Documents in Psychology, 1980, 10, 39, Ms. 2044.

Taylor, R.B. & Stough, R.R. Territorial cognition: Assessing Altman's typology. Journal of Personality and Social Psychology, 1978, 36, 418-423.

Thorndike, G.L. On the fallacy of imputing the correlations found for groups to the individuals or smaller groups composing them. American Journal of Psychology, 1939, 52, 122-124.

Tien, J.M., O'Donnell, V.F., Barnett, A., Mirchandani, P.B. Street Lighting Projects, Washington: Department of Justice, 1979.

Titus, R.M. Evaluating the physical environment. In Smith, R.M., Neisworth, J.T., & Greer, J.G. Evaluating Educational Environments. Columbus: Merrill Publishing, 1978.

Tuan, Yi-Fu, Topophilia: A study of environmental perception, attitudes, and values. Englewood Cliffs, NJ: Prentice-Hall, 1974.

Tuan, Y. Space and Place: The Perspective of Experience. Minneapolis: University of Minnesota Press, 1976.

Tukey, J.W., Causation, regression, and path analysis. In O. Kempthorne, T.A. Bancroft, J.W. Gowen, & J.L. Lush (Eds.) Statistics and Mathematics in Biology. Ames, Iowa: Iowa State College Press, 1954.

Turner, M.E., & Stevens, C.D. The regression analysis of causal paths. Biometrics, 1959, 15, 236-258.

Verbrugge, L.M., & Taylor, R.B. Consequences of population density and size. Urban Affairs Quarterly, 1980, 16, 135-160.

Waller, I., & Okihiro, N. Burglary: The Victim and the Public. Toronto: University of Toronto Press, 1978.

Wandersman, A., & Giamartino, G.A. Community and individual difference characteristics as influences on initial participation. American Journal of Community Psychology, 1980, 8, 217-228.

Warren, R.L. The Community in America. Chicago: Rand-McNally, 1963.

Webster Seventh New Collegiate Dictionary. New York: GEC Merriam Co., 1967.

Weinstein, N.D. Individual differences in reactions to noise: A longitudinal study in a college dormitory. Journal of Applied Psychology, 1978, 63, 458-466.

Wellman, B., & Leighton, B. Networks, neighborhoods and communities: Approaches to the study of the community question. Urban Affairs Quarterly, 1979, 14, 363-390.

Westinghouse Electric Corporation. Crime Prevention through Environme Design, Residential Demonstration Plan. Minneapolis, Minnesota. Arlington, VA: 1976.

Westinghouse Electric Corporation. Crime Prevention through Environmental Design. CPTED Program Manual. Volume I. Planning and Implementation Manual. Arlington, VA: 1977a.

Westinghouse Electric Corporation. Crime Prevention through Environmental Design. CPTED Program Manual. Volume II: CPTED Strategies and Directives Manual. Arlington, VA: 1977b.

Wheeldon, P.D. The Operation of voluntary associations and personal networks in the political processes of an inter-ethnic community. In J.C. Mitchell (Ed.) Social Networks in Urban Situations. Manchester: University of Manchester Press, 1969.

Wicker, A. An Introduction to Ecological Psychology. Monterey, CA: Brooks/Cole, 1979.

Wilson, S. Vandalism and 'defensible space' on London housing estates. In R.V.G. Clarke (Ed.) Tackling Vandalism. London: Her Majesty's Stationary Office, 1978.

Winer, J.S. Statistical Principles in Experimental Design. New York: McGraw Hill, 1962.

Wolfe, M., Room size, group size, and density: Behavior patterns in a children's psychiatric facility. Environment and Behavior, 1975, 7, 199-224.

Wolfgang, M.E., Figlio, R.M. & Sellin, T. Delinquency in a Birth Cohort. Chicago: University of Chicago Press, 1972.

Wright, H.F. Recording and Analizing Child Behavior. New York: Harper and Row, 1967.

Wright, S. Path coefficients and path regressions: Alternative or complementary concepts? Biometrics, 1960, 16, 189-202.

Young, M.D. & Wilmott, P. Family and Kinship in East London. Baltimore: Penquin, 1957.