ECOLOGY OF INTRA-URBAN DELINQUENCY AND CRIME: A REASSESSMENT

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ABSTRACT

This paper identifies the development of theory and method in research pertaining to ecological aspects of delinquency and crime within urban areas. It is found that research effort in this field is focussed mainly on estimating the association between social area characteristics and delinquency and crime rates. It is suggested that incorporation of individual level determinants of delinquency and crime along with aggregate level properties of the area will enable us to derive the net effects of the area on occurrence of delinquency and crime. Hypotheses of this nature can be tested using the method of contextual analysis.

This paper addresses the development of theory and method in research pertaining to ecological aspects of delinquency and crime. This area of research examines the spatial distribution of the levels of delinquency and crime among populations which have homogeneous social and cultural characteristics.

The scope of this paper is confined to the methodological and theoretical aspects of the ecology of delinquency and crime within urban areas. The term delinquency and crime is taken to mean a large number of behaviors that violate legal norms [1].

EARLY STUDIES

Many of the early studies on intra-urban variations in delinquency and crime stem from the Chicago school of human ecology. The most prominent among the early studies is that of Shaw and McKay [2], which examined the spatial distribution of male delinquents in Chicago. Shaw and McKay noted a few

empirical regularities in the occurrence of delinquency and crime across the city. The central business district with dilapidated and low rent housing was found to exhibit high delinquency and crime rates. They attributed these high levels of delinquency and crime to social disorganization. Areas of social disorganization are characterized by sub-standard housing, poverty, and large number of immigrants who have confused values and limited social cohesion. Levels of social disorganization decrease from the city's centre to the periphery. Delinquency rates also exhibit the same trend. The central finding of their study was that delinquency areas persisted over time despite changes in the composition of the populations. Furthermore, delinquency areas with high male delinquency rates also had high female delinquency rates and were characterized by declining populations. Shaw and McKay's study was replicated in other countries and the evidence so far, with some exceptions, supports their findings [3–7].

Criticisms of Shaw and McKay's study were mainly directed at their model of social disorganization, in which they failed to control for legal, administrative, and socioeconomic changes which might influence delinquency rates [8].

FACTOR ANALYTICAL STUDIES

Subsequent studies utilizing multivariate models addressed themselves to the issue of controls. Lander, in a study of Baltimore, contended that the decrease in rates of delinquency and crime by zones from the central business district to the periphery is not as significant as the variation of rates within each zone constituted by census tracts [9]. Lander examined crime rates by individual tracts. He found that crime rates rose by commercial areas but not necessarily by individual areas. To test the net effect of the area (environmental factors) on delinquency rates postulated by Shaw and McKay, he entered the demographic and spatial properties of the area into a multiple regression model. He found that the proportions of home ownership and nonwhites were statistically significant in affecting delinquency rates. Variables such as level of rent, over-crowding and proportion of dilapidated housing which Shaw and McKay found indicative of social disorganization and related to area delinquency rates were found to be unimportant by Lander.

In order to explore the nature of association among variables and delinquency rates, he used a factor analytical model which isolated two configurations of variables. The first factor included average education, rent, substandard housing, and overcrowding. He labeled this factor social instability. The second factor contained delinquency rates, percentage of owner-occupied dwellings, and proportion of nonwhites which he labeled the anomie factor. He suggested that the incidence of delinquency is primarily associated with anomic conditions

rather than with socioeconomic conditions. Anomie refers to the conditions in which there is a breakdown of norms. Persons become familiar with two or more value systems and feel loyal to none. Similar results have been reported in British studies [10, 11].

The association between delinquency rates and the proportion of nonwhites was not uniform across all tracts. Only where Blacks constituted 50 per cent or less of the population in the area does the delinquency rate increase. Willie and Gershenowitz found that in the lower class, racially heterogeneous areas where delinquency rates were high, some forms of delinquency were less tolerated than they were in racially homogeneous areas [12]. In other words, " . . . we cannot unequivocally assert that certain nationality or racial groups have high rates of crime regardless of their geographical location nor can we state that geographical location exclusively determines crime rates of such groups." [13, p. 65]

Assessment of Factor Ecological Studies

Lander's conclusion that socioeconomic conditions were not important in explaining delinquency rates for census tracts brought about a great deal of interest in the replication of his research [14, 15]. Bordua partially replicated Lander's study for Detroit [14]. Unlike Lander, he found that over-crowded housing and average education were associated with delinquency rates and the proportion of nonwhites was unimportant. Although Bordua and Lander found different sets of variables associated with delinquency, Bordua too labeled his variable configuration anomie factor.

Chilton replicated the Lander and Bordua studies using Indianapolis census tracts. His findings do not support Lander's conclusions [14]. "Delinquency still appears to be related to transiency, poor housing and economic indices; this supports the assumption of almost all sociological theories of delinquency, that delinquency in urban areas is predominantly a lower class phenomenon." [15, p. 83]

A deep and insightful commentary on the technical aspects, especially of the Lander and Bordua studies, comes from Gordon [16]. Gordon reanalysed the data for the three cities studied by Lander, Bordua, and Chilton, and observed that inaccurate rotation and partialling fallacy has led to the erroneous extraction of factors. Despite Lander's claim that the anomie factor is important, Gordon observes that the association between socioeconomic status and delinquency rates is stronger. The controversy over the nature of the theoretical relationship between economic conditions and delinquency, led to a renewed interest in the reassessment of theories of delinquency.[1]

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[1] For an excellent review of theories of delinquency, see [17, 18].

Assessment of Ecological Theory

The construct of social disorganization used by Shaw and McKay is far from clear. On the one hand, the concept means a lack of social cohesion, confused values, and inability to adjust to or resolve community problems. On the other hand, they observed that in problem areas, the criminal values are transmitted from generation to generation and that much of the crime is found to be organized. This confusion led to the need for theoretical reformulation of Shaw and McKay's theory.

Sutherland reformulated Shaw and McKay's concept of social disorganization in terms of social organization [19, p. 43]. It is argued that the preponderance of criminals in an area increases the possibility of association with criminals and the acquisition of criminal values. The transmission of these values takes place within organized groups [2, 20]. Evidence of the organization and transmission of values and skills gave rise to the "delinquent subculture" theory [1, 21]. According to this theory delinquent behavior is seen as a result of restricted access to legitimate opportunities for economic mobility. The absence of legitimate opportunities produces different attitudes toward education, occupational careers, and different patterns of controls and sanctions for defined sets of misbehavior among the lower class[22, 23].

SOCIAL AREA ANALYSIS STUDIES

The theoretical emphasis placed on socioeconomic conditions of the residential area led to a revision of methodology. Shevky and Bell have placed socioeconomic status and family status in a framework of macro-theory of social change and have developed the method of social area analysis [24]. Using three concepts, socioeconomic status, family status, and ethnicity, the analysis of delinquency and crime is placed in different theoretical perspective. In social area analysis, each of these constructs is made up of census variables. Often the socioeconomic status construct is indicated by education, occupation, and income; family status is indicated by family size and the age composition of the area, and ethnicity is represented by proportions in various racial or ethnic groups.

Polk classified census tracts in San Diego, California, using the framework of social area analysis [25]. Applying correlation and partial correlation techniques, he found a positive association among delinquency rates, low family status, and high ethnic status. Smaller correlations were found between delinquency rates and economic status.

Schmid studied the spatial patterns of crime rates in Seattle census tracts [26]. Twenty crime variables and eighteen demographic, social, and economic variables were factor analyzed. Of the eight factors extracted, three were labeled low social cohesion, low family status, and low occupational status

respectively. He found the family status dimension negatively correlated with various crime categories which varied in their pattern of spatial distribution. Areas characterized by low fertility ratios, few single family dwellings, and high percentages of women in the labor force have high rates of crime. Schmid concluded that neither the concept of differential association derived from Shaw and McKay's theory nor the concept of anomie adequately explain the pattern of crime in Seattle.

The Family Status and Delinquency Association

The low association between economic status and delinquency rates and the relative importance of family status dimension necessitated a re-examination of the assumption that broken homes are a function of lower class status. Social area analysis is used to empirically confirm the relationship between family status and delinquency rates. Quinney reports a high incidence of delinquency among high family status and low socioeconomic status groups [27]. The indication that levels of delinquency rates vary within levels of socioeconomic status and family status is tested by Polk [28] and Willie [29]. The common finding is that economic status and family status have independent and joint effects on delinquency rates. Willie also reported that the rates are similar for members of white and nonwhite populations who live in areas of many broken homes and low income [29]. Detection of joint effects of family status and economic status on delinquency rates led to the search for and use of techniques for the isolation of joint effects. Rosen and Turner present a procedure called predictive attributive analysis which enables the interaction effects to be uncovered [30, 31].

A theoretical interpretation of areal effects on delinquency is attempted by Johnstone [32], who obtained self reports of delinquency and crime from a sample of fourteen to eighteen year olds living in Chicago and its suburbs and suburban fringes. The youths were placed in nine different status contexts obtained by cross-classifying three levels of socioeconomic characteristics of the census tracts (area status) and three levels of socioeconomic characteristics of the family (family status). He examined the pattern of incidence of delinquency in the nine different status contexts to isolate the independent, combined, and interactive effects of family status and area status on delinquency.

He found that the highest values on all delinquency indices occurred among the lower socioeconomic status groups who were living in middle or high status communities rather than in the heart of the slum area. Hagan, et al. [33], found that although socioeconomic status and housing density had both a direct and an indirect effect through people's complaints on official rates, delinquency was explained better by family status. Johnstone found no patterns where it was possible to say that groups in economically depressed areas showed higher levels of delinquent involvement [32].

Assessment of Social Area Analysis Studies

Most of the findings of social area research have been at the level of association. Causal explanation is lacking. Social area research has typically involved attempts to establish patterns of association between spatial distribution of delinquency and relevant independent variables. Most of the independent variables considered have been at the aggregate level, although several relevant social psychological concepts such as anomie, value stretch, etc., have been mentioned as determinants of delinquency [2, 9, 26]. Sheldon and Glueck [34], in a study of delinquency, suggested that the reason some boys in a given locality become delinquents while others do not can be explained in terms of differential psychological development; that is, both individual characteristics and environmental factors have joint effects on delinquency. Attempts to include social psychological variables in an ecological model are few and far between.

THE MULTIPLE REGRESSION APPROACH

In the late 1970's there has been little interest in ecological studies of delinquency and crime. The current research effort, now labelled as "etiology of crime" attempts to identify the causes of urban crime at an aggregate level. Though they use data aggregated at different geographical units [35, 36], there is no specific interest in the effect of the area or the context on delinquency and crime rates. Beasley and Antune analyzed 1970 crime data for Houston which was aggregated at the level of the police districts [35]. Population density and average income explained more than 75 per cent of the variation in total crime, personal crime and property crime respectively. Utilizing a second order polynomial model, they were also able to increase the explained variation in each of the crime categories. Mladenka and Hill reanalyzed Beasley's data and replicated the study for Houston using the modified police district crime data [36]. They do not support Beasley's conclusion that all crime rates are best predicted with nonlinear model. Instead, they suggest that functional forms differ from one crime category to another.

A METHODOLOGICAL ASSESSMENT
OF ECOLOGICAL STUDIES

Research described has made use of social area analysis and factor analysis. Many of these studies have been flawed by their technical errors [7, 15, 16, 30, 37]. Chilton, however, reanalyzed data produced by studies prior to 1967 and concluded that, " . . . correction for methodological shortcomings requires little or no modification of substantive conclusions about the relative importance of economic, family and racial factors . . . . " [38, p. 82] While we are assured of

the computational and technical reliability, there are a number of doubts regarding the validity of the findings. The most important of them are the problems of aggregation bias and individualistic fallacy. They result when areal units to which predictions relate are not of the same size [39, 40], and when an interpretation is made which ignores the possibility that people who are homogeneous on certain social characteristics behave differently in different contexts.

The first of these problems, aggregation bias, causes disparities between individual level and areal level measures of association. Usually when individuals are grouped on the basis of homogeneity on an independent variable, the regression equation will yield unbiased estimates. Grouping data according to the values of a dependent variable will produce specification even when the individual level model is well specified [41—43]. Beyond these statistical guidelines, an adequate understanding of aggregation bias is best gained through knowledge of group size, composition, and pertinent contextual properties of geographical units under consideration.

DISCUSSION

Notwithstanding the problems noted, the current research in the field is seriously devoid of causal explanations. For example, inasmuch as the statement that low social class areas produce high amounts of delinquency is interesting, the processes by which high or low amounts of delinquency are produced in a given area is seldom explicated. This remains the case because of the lack of techniques for modelling individual level behavior at various levels of aggregation.

Blau suggests a method which defines the structural properties in terms of the individual level and environmental properties [44]. The model which incorporates the interaction between the two is called a contextual model. A contextual model hypothesizes that the behavior of individuals depend not only upon their characteristics but also upon the characteristics of other persons within the defined environment.

Contextual models enable us to incorporate group as well as individual level characteristics to predict individual level delinquent and crime behavior. A group characteristic which can be measured by the model consists of analytical, structural, or global properties [45]. One arrives at a measure of analytical and structural properties by mathematically manipulating the individual level data and data on structural relationships among members of the group [46]. Global properties are emergent properties. Unlike structural and analytical properties they cannot be reduced to individual level measures, since they are properties that exist for all units independent of the composition of the group. For example, the chance of upward mobility is a consequence of the relative ability of the individual and also of changes in the mix of jobs in the economy [47].

Indicators such as mean income of a neighborhood, can reflect the conservatism of a neighborhood. Here, conservatism is taken as a global variable. A person living in a high income neighborhood can be then expected to be more conservative than a person with the same income living in a low income neighborhood. However, such interpretations have to be made very cautiously. Global effects may occur due to the correlation between specified global measures and an uncontrolled causal level individual variable. Correlation between specified global measures and other unspecified group level variables can also produce global effects [48]. A correct interpretation of global effects will call for specification of causal mechanisms among variables suggested by theory. In the study of delinquency and crime it is possible to specify global effects, such as an aggregate property of an area, by utilizing a contextual model. The model enables us to estimate the effect of aggregate property net of the individual level effects.

In sum, the method of contextual analysis can be used to predict individual level delinquency and criminal behavior by taking into consideration the emergent properties. Contextual models may also aid in predicting spatial patterns of delinquency and crime by taking into consideration the effects of a given milieu.

CONCLUSION

In this paper the author has tried to survey the field of ecological research in delinquency and crime and to identify the growth of theory and method in this area. Research in this area has not yet successfully formulated a causal theory. We still do not know much about the spatial patterns of growth and the expansion of delinquency and crime over time. Currently most of the research is focussed on identifying associations between areal properties and delinquency and crime rates. Such studies have failed to incorporate individual level variables in the same model. It has been indicated that contextual modelling can be used to incorporate aggregate properties of an area and individual level determinants of delinquency and crime in the same equation. Use of contextual models in future studies will aid us in enriching the existing ecological theories of delinquency and crime.

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