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### Permalink

<https://escholarship.org/uc/item/0920m553>

### Journal

Social Networks, 32(3)

### Author

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### Publication Date

2010

Peer reviewed

**Micro-structure in micro-neighborhoods: A new social distance measure, and its effect on individual and aggregated perceptions of crime and disorder**

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September 10, 2009

*Post-print: Published in Social Networks (2010) 32(3): 148-159*

Word count (not including references): 9,389

Word count (including references): 11,343

Running Head: "Micro-neighborhood social distance and perceived crime/disorder"

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### **Biography**

**John R. Hipp** is an Associate Professor in the departments of Criminology, Law and Society, and Sociology, at the University of California Irvine. His research interests focus on how neighborhoods change over time and how change both affects and is affected by neighborhood crime. He has published substantive work in such journals as *American Sociological Review*, *Criminology*, *Social Forces*, *Social Problems*, *Mobilization*, *City & Community*, *Urban Studies* and *Journal of Urban Affairs*. He has published methodological work in such journals as *Sociological Methodology*, *Psychological Methods*, and *Structural Equation Modeling*.

**Micro-structure in micro-neighborhoods: A new social distance measure, and its effect on individual and aggregated perceptions of crime and disorder**

**Abstract**

This study links social network methodology with the social disorganization literature to test the effect of block-level social distance on neighborhood perceived crime and disorder. Employing a unique study design that allows creating matrices of social distance (based on demographic characteristics) between 11 residents on each of over 650 blocks at three time points, we find that more socially distant residents perceive more disorder than their neighbors. Consistent with the bridging social capital literature, overall social distance in the block has a curvilinear relationship with perceived crime. And blocks with two cohesive subgroups, based on social distance, have lower levels of perceived disorder.

*Keywords:* neighborhoods; crime; disorder; social disorganization; social distance.

**Micro-structure in micro-neighborhoods: A new social distance measure, and its effect on individual and aggregated perceptions of crime and disorder**

Nearly all residents prefer to live in neighborhoods free of crime and disorder. Studies consistently show that residents report less satisfaction with the neighborhood if there is, or they perceive, more crime (Adams 1992; Davis and Fine-Davis 1981; Harris 2001; Lu 1999; Parkes, Kearns, and Atkinson 2002; Woldoff 2002). Likewise, crime and disorder reduce attachment to the neighborhood (Sampson 1991). Furthermore, studies have suggested that neighborhoods with more crime or disorder lead to higher rates of residential mobility (Dugan 1999; Kearns and Forrest 2003; Oropesa 1989; Skogan and Maxfield 1981), and a subsequent downward spiral (Skogan 1990). Thus, crime and disorder play important roles in neighborhood transition. Of course, crime or disorder can only bring about behavioral change if residents actually *perceive* this increased level of crime or disorder.

A key theory for understanding perceptions of crime and disorder is the social disorganization theory, and one of its key constructs is the notion that racial/ethnic heterogeneity affects the amount of neighborhood crime. Implicit in this formulation is the notion of *social distance*. We are building here on Merton's (Merton 1968) notion of social distance—based on various social categories—rather than a measure of social distance based on interactional behavior. Thus, residents who differ on the characteristic of race/ethnicity may interact less frequently as a consequence, or may have differing cultural attitudes and perspectives, reducing the ability of the neighborhood to provide informal social control in response to crime threats. Indeed, there is a wealth of evidence suggesting that neighborhoods with more racial/ethnic heterogeneity have higher rates of crime (Hipp 2007b; Roncek and Maier 1991; Rountree and Warner 1999; Sampson and Groves 1989; Smith, Frazee, and Davison 2000; Warner and Rountree 1997) and disorder (Connerly and Marans 1985; Hipp 2007a; Rountree and Warner

1999; Warner and Rountree 1997). Although race/ethnicity is clearly important for social processes in the U.S., there seems little reason to ignore other dimensions of social distance. There is a broad literature building on the work of Simmel (1955) and Blau (1977; 1987) suggesting that social distance along a number of dimensions can affect social interactions (McPherson and Ranger-Moore 1991). Given that a key insight of social disorganization theory is that neighborhoods with fewer social interactions will have more crime due to a reduced ability to provide informal social control, exploring *any* social dimensions that might affect social interaction is crucial.

Studies have not addressed these questions in part due to the data limitation challenges. We utilize a unique dataset that provides us information on all residents in a micro-neighborhood (usually eleven households). We create a measure of social distance that takes into account numerous social dimensions—rather than just race/ethnicity—and create a matrix for each micro-neighborhood based on these social distances. We then test whether individuals who are more socially distant from their neighbors perceive more crime or disorder in the neighborhood. Beyond such individual-level effects, extant theory suggests that structural dimensions of aggregate social distance may increase perceptions of crime or disorder by all residents in the micro-neighborhood. This may occur because this social distance affects the actual level of crime or disorder, or because it affects residents' *perceptions* of this crime or disorder. Regardless which process is at work, the consequence is the same if these perceptions lead to behavioral changes on the part of residents. Furthermore, this social distance need not only affect crime or disorder in a linear fashion, but there are also theoretical reasons that we explore below to expect that these structural effects may have nonlinear effects.

In what follows, we begin by discussing four possible determinants of social distance suggested by past scholarship. We consider theoretical models positing the importance of social

distance for affecting the perceptions of crime or disorder of individuals within a micro-neighborhood, or how the structure of social distance in the micro-neighborhood might have important effects. After describing the data and methods we employ, we present our results. We close with conclusions and implications.

## **Theoretical background**

Social distance falls under the more general conceptualization of distance, which includes both physical distance and social distance. Zipf (1949) suggested that propinquity effects can be explained by individuals following a principle of least effort expended. Mayhew and colleagues (Mayhew, McPherson, Rotolo, and Smith-Lovin 1995) extended this concept from propinquity to the notion of social distance, and noted that the tendency to prefer communication with others who speak the same language can be considered a special case of the energy distribution principle. It is straightforward to extend this notion of sharing the same language to other characteristics that create shared cultural cues. Social distance thus can be important in affecting the formation of social ties and in creating a sense of mistrust between residents, which may affect perceptions of crime or disorder. We consider these possibilities below.

### *Determinants of Social Distance*

Theoretical models have suggested at least four key social characteristics that are important for fostering social distance: 1) economic class; 2) racial/ethnic differences; 3) life course position; 4) social upbringing.<sup>1</sup> Figure 1 presents this conceptual model, and highlights that these various determinants *create* social distance. Whereas we focus here on the effect of

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<sup>1</sup> Although gender would also be a key determinant for many outcomes, it has less meaning in a neighborhood context given that most households are mixed in terms of gender. Although there will be some distance given the presence of divorced households, the social distance measure we created likely captures this by measuring distance based on marital status.

Micro-neighborhood social distance and perceived crime/disorder

social distance on perceived crime and disorder, its effect on the formation of ties, neighborhood cohesion, marriage patterns, and other outcomes has also been studied (Alba and Kessler 1979; Gray 1987; Hipp and Perrin 2009; Jones 1991; Lee 1988; McCaa 1989; Pagnini and Morgan 1990; South and Messner 1986). We consider each of these determinants of social distance next.

<<<Figure 1 about here>>>

Arguably the most fundamental sociological determinant of social distance is economic class. Beginning with early work by Marx (1978) and Weber (1968), studies have focused on how differences in socio-economic status can create distance between individuals (Beynon 1936). Recent work in this tradition has viewed economic inequality as social distance between individuals that leads to strain and hostility (Hipp 2007b; Morenoff, Sampson, and Raudenbush 2001). There is evidence that wealth differences based on the value of one's home affects the likelihood of casual social interaction with one's neighbors, even when accounting for the physical distance between residents (Hipp and Perrin 2009).

The twentieth century saw the theoretical extension of social distance to include racial/ethnic differences. This view has become dominant such that many social distance measures are synonymous with racial/ethnic difference (Bogardus 1947; Jargowsky 1996; Johnson and Marini 1998; Jones 1991; Portes 1984; Rosenbaum 1992; Verkuyten and Kinket 2000; Warner and Dennis 1970). Thus, it is the perception of difference between individuals and members of various other racial/ethnic groups that is conceptualized as social distance (Canon and Mathews 1971; Evans and Giles 1986; Matthews and Westie 1966; Payne, York, and Fagan 1974; Siegel and Shepherd 1959). Studies have found that high school students exhibit strong tendencies towards selecting same race friends (Mouw and Entwisle 2006; Quillian and Campbell 2003), and there is much evidence regarding intermarriage rates (Alba and Kessler



1979; Gray 1987; Jones 1991; Lee 1988; McCaa 1989; Pagnini and Morgan 1990; South and Messner 1986).

The life course perspective has advanced the view that social positions fundamental to most societies—age, marital status, and presence of children—are important for creating social distance and reducing interaction (Elder 1985; Elder 1998; La Gory and Pipkin 1981; Michelson 1976). Age is particularly important for creating social distance, as birth cohorts experience different life events that create differences in attitudes and viewpoints (Elder 1999).

Additionally, “homogamy on age in marriage is so taken for granted that it is seldom even studied” in research of the U.S. (McPherson, Smith-Lovin, and Cook 2001). Difference in age may reduce everyday interactions that would otherwise promote the formation of social ties (Elder 1985; Elder 1999; Elder 1998; Hipp and Perrin 2009; La Gory and Pipkin 1981; Michelson 1976). Besides age, marital status and the presence of children are also important determinants of social distance. Marital status leads to lifestyle differences from those who are single (Fischer 1982), resulting in reduced social interaction (Hipp and Perrin 2009), while the presence of children creates a host of role expectations that result in considerable lifestyle differences from those without children (Fischer 1982; Stueve and Gerson 1977).

A fourth possible determinant of social distance comes from Bourdieu (1984), who argued that early life histories imprint individuals into a social class that creates social distance throughout life from others without that social background. As a result, two individuals raised in different cultures or sub-cultures will have different attitudes and viewpoints. For instance, growing up in an urban area may lead to a different outlook from someone raised in a rural area (Wirth 1956a; Wirth 1956b), or the perception of such differences (Simon, Hastedt, and Aufderheide 1997). Likewise, being raised in a different society, or even a particular part of the country, may lead to social distance between individuals (Breton 1964; Logan, Alba, and Zhang

2002; Quillian 1995). Bourdieu also argued that obtaining more education will lead to different views from those with less education, creating social distance and hence interacting infrequently.

### *Measuring Social Distance between Neighbors*

These different determinants of social distance can be combined into a measure of overall social distance between households in a neighborhood. Building on the work of Peter Blau (1977; 1987), the overlap in various characteristics among individuals will minimize the social distance between them. For instance, focusing only on marital status and the presence of children for expositional purposes, an individual who is married with children will have most in common with someone else who is married with children. However, this person will only have a moderate amount in common with someone who is married *without* children: they will have married life in common, but not the issues of dealing with children. Likewise, they would have a moderate amount in common with an unmarried person with children: they would have the commonality of children, but different experiences regarding married life. Finally, this person will have much less in common with someone who is single with no children. These various social statuses should lead to differing attitudes and interests, and Skvoretz (1983) has formalized Blau's model to take into account in-group preferences. It is straightforward to generalize the concept of social distance to continuous measures. In such instances, we can talk about the *degree* of difference between two individuals based on a particular status, rather than an absolute difference as is the case for categorical determinants. This social distance may have important effects on residents' perceptions of crime or disorder.

### *Effect of individual-level social distance on perceived crime and disorder*

Residents who are more socially distant from their neighbors may perceive more crime and disorder in the neighborhood for various reasons. This may occur because this distance reduces social interactions with neighbors (Connerly and Marans 1985; Rountree and Warner

1999; Warner and Rountree 1997), or because it leads to a lack of trust (Ross and Jang 2000), or because it fosters a sense of disconnect and lack of cohesion with the neighborhood (Morenoff, Sampson, and Raudenbush 2001).

Although social distance along various dimensions can impact neighborhood relations, most studies focus only on the effects of racial/ethnic difference. Ethnographic work has shown how difference in color of skin can play an important role in fostering mistrust (Anderson 1999). However, quantitative studies have not shown a strong effect on individual perceptions of crime or disorder. For instance, one study concluded that racial stereotypes characterizing African-Americans as more violent appeared to be a more likely explanation than social distance for perceptions of crime (Quillian and Pager 2001). Likewise, a study of block groups found that racial stereotypes were more important than social distance for explaining perceptions of social and physical disorder (Sampson and Raudenbush 2004). Despite the important consequences of race/ethnicity in the U.S. in many instances, it may be that measuring social distance along a number of categories, and the cross-cutting nature of multiple dimensions, is more important for impacting perceptions of crime and disorder in the neighborhood (Blau 1987).

*Effects of structural social distance on micro-neighborhood-level crime and disorder*

Beyond this individual-level effect for those who are most socially distant, there are possible contextual effects for all residents living in micro-neighborhoods with greater social distance. To the extent that social distance reduces interaction between residents, and this interaction is important for reducing crime and disorder (Bellair 1997; Sampson and Groves 1989; Warner and Rountree 1997), neighborhoods with greater social distance between residents should have higher reported levels of crime or disorder. Likewise, neighborhood social distance may impact crime or disorder through its effect on neighborhood cohesion. For instance, research in the cohesion literature implicitly focuses on a single dimension of social distance

when it tests and finds that racial/ethnic heterogeneity significantly reduces perceived neighborhood cohesion (Connerly and Marans 1985; Sampson 1991). Recent work by Sampson and colleagues (Morenoff, Sampson, and Raudenbush 2001; Sampson and Raudenbush 1999; Sampson, Raudenbush, and Earls 1997) has suggested that neighborhood cohesion is a key component of collective efficacy, and this collective efficacy plays an important role in reducing neighborhood crime and disorder by increasing the belief that neighbors will respond collectively to neighborhood safety threats.

However, few studies have empirically tested whether general social distance affects perceptions or actual levels of neighborhood crime or disorder. While a few studies have tested whether economic social distance (as measured by income or wealth inequality) affects crime rates (Crutchfield 1989; Hipp 2007b; Messner and Tardiff 1986), most studies have focused almost exclusively on the effect of racial/ethnic distance. Thus, studies have tested and found that racial/ethnic heterogeneity leads to more disorder (Connerly and Marans 1985; Hipp 2007a; Rountree and Warner 1999; Warner and Rountree 1997) or to higher crime rates (Hipp 2007b; Roncek and Maier 1991; Rountree and Warner 1999; Sampson and Groves 1989; Smith, Frazee, and Davison 2000; Warner and Rountree 1997). Nonetheless, studies have failed to test whether social distance as measured by *a number of determinants* affects crime or disorder.

When considering the effects of social distance in a larger geographic aggregation, incorporating a network perspective provides more insight than simply considering the average level of social distance. For example, consider the network of an entire city. One possible structure would entail very dense localized ties. Such a structure would imply tightly grouped cliques within micro-neighborhoods that are relatively isolated from one another. In contrast, an alternative structure would entail network ties criss-crossing the various micro-neighborhoods. This latter structure would permit greater information flow throughout the entire network.

Indeed, the former structure was described qualitatively by Gans (1962) in his study of the East Side of Boston in the late 1950's. Although the micro-neighborhoods that Gans observed were highly cohesive, they were relatively isolated from one another. As a consequence, Gans argued, these various micro-neighborhoods were unable to band together to take collective action to stop the gentrification that shattered their neighborhoods. Granovetter (1973: 1374) described how this process can lead to an overall fragmentation in the network.

To the extent that addressing neighborhood crime requires a similar collective response on the part of residents (Sampson and Raudenbush 1999; Sampson, Raudenbush, and Earls 1997), such a dense micro-structure of groups isolated from one another may make it difficult for residents to band together and provide the social control necessary to reduce crime. This idea was developed in the notion of bridging social capital (Bellair 2000; Beyerlein and Hipp 2005; Hipp and Perrin 2006; Putnam 2000), and the importance of these broader communication flows for addressing the challenges of crime and disorder. Indeed, Bellair (1997) argued that the presence of numerous weak ties allows residents time to foster ties with others in the broader community beyond their local micro-neighborhood, and therefore were more effective at reducing crime than strong ties. These broader ties are hypothesized to allow linking to the resources of the broader community, making crime fighting more effective. In contrast, micro-neighborhoods with numerous strong ties require considerable time resources, and therefore inhibit the formation of broader-based ties. This results in a bonding social capital that may not be as effective in obtaining broader community resources.

These considerations imply a curvilinear relationship between the amount of social distance in a micro-neighborhood and crime. Although most conceptualizations of social distance simply posit a linear positive effect on neighborhood crime and disorder, there are theoretical reasons to expect nonlinear effects. Whereas a high level of social distance in a

micro-neighborhood may result in few ties in general, and a very low level of social distance may result in a local network with dense, strong ties that are not linked to the broader community, a modest amount of social distance may limit the number of strong ties within a micro-neighborhood that take time away from more bridging ties to others in the broader community. Additionally, small amounts of social distance may be acceptable or even desirable, but beyond a certain point increasing social distance may inhibit the pattern of social interactions. For instance, a study of New York City neighborhoods from 1830 to 1875 observed “that densely connected networks apparently thrived only in the very poorest of neighborhoods suggests that their absence elsewhere may have been socially beneficial (Scherzer 1992: 204).

Beyond this broader network perspective, it is also useful to consider the possibility that the social distance structure *within* a micro-neighborhood might affect perceptions of social and physical disorder. Recent scholarship has argued that the *social perception* of disorder may be just as important, if not more important, than the objective level (Sampson 2009; Sampson and Raudenbush 2004). In this formulation, residents form an assessment of the level of social and physical disorder through a social process, and this need not map precisely onto the actual level of disorder. Residents may use environmental cues when inferring the amount of disorder. For example, the presence of certain racial/ethnic minority residents may be used as a cue that disorder exists despite possibly limited objective evidence (Sampson and Raudenbush 2004).

This notion of the social construction of disorder suggests that how residents process such cues may be important. Moving beyond an individualistic approach, we can consider a process through which residents observe cues in the neighborhood and then share this information with their fellow residents. In this manner, residents help each other form their perceptions of disorder in the neighborhood. This implies that the network structure can impact this perception of disorder: for example, Warner and Rountree (1997) argued that

neighborhoods with tightly linked residents will increase awareness of nearby burglaries. For social disorder, close networks may make residents more aware of persons and events that are perceived as incivilities.

Beyond bringing about awareness, network ties can help residents process such information. Thus, in some neighborhoods, information about acts of social disorder may engender a sense of foreboding and impending decline in neighborhood quality. In other neighborhoods, information about particular events may be perceived as less ominous. This might occur because residents collectively construct a narrative that the event is out of the ordinary and therefore an anomaly. Or this might occur because residents construct a perception that an event is actually not problematic—for example, whereas one resident might mistake young males hanging out on a street corner as members of a gang, another resident might know one or more of these youths and therefore be aware that they are in fact neither gang members nor threats to the neighborhood. Such information can help residents accurately process the information. Or this might occur because residents feel a sense of collective efficacy about their ability to respond to such problems and therefore the event does not appear threatening to the neighborhood. If it does not appear threatening, they may be less likely to perceive it as social disorder.

What types of micro-neighborhoods might reduce the likelihood that neighborhood residents perceive events as social disorder? This might occur in micro-neighborhoods with low social distance, or it might occur in micro-neighborhoods in which residents at least feel close to a *subset* of neighbors. This suggests that it may not be enough to simply consider the amount of social distance in a micro-neighborhood, but to view the amount of social distance among subgroups *within* a micro-neighborhood. This implies the importance of the social distance network structure within this smaller micro-structure, and that the presence of subgroups based

on social distance in the micro-neighborhood may be important for perceptions of disorder. For instance, a neighborhood such as the one in Figure 2 in which two distinct groups are present with little social distance *within* them but considerable distance *between* them might increase interaction among their members enough to create the type of solidarity necessary for the formation of cohesion or collective efficacy. In this case, the difference from the members of the other subgroup may be of less concern as long as one has some fellow residents to which one feels close. Such residents might create a mix of strong ties (in this subgroup) and weak ties (to the other group) that allow time for fostering weak ties with residents of the broader neighborhood. The presence of a subgroup of similar households in a micro-neighborhood may also impact perceptions if it allows residents to take events that would otherwise be cognitively transformed into a perception of disorder and instead view them in a more benign fashion. This contrasts with the neighborhood in Figure 3 with similar total social distance but a different overall structure. Building on the insight of the collective efficacy literature, the formation of subgroups within the micro-neighborhood may affect cohesion and trust, and hence perceived disorder.

<<<Figures 2 and 3 about here>>>

### *Summary*

We have suggested that the amount and structure of social distance between residents in a micro-neighborhood may have important implications for the common perception of crime or disorder. We do not distinguish whether this micro-neighborhood social distance affects the actual level of crime or disorder or whether it biases residents towards perceiving more crime or disorder. We next describe the data used to explore these questions.



## **Data and Methodology**

### *Data for analyses*

We employ a unique sub-sample of the American Housing Survey (AHS) to address these research questions. Whereas the complete AHS is a national sample of about 60,000 housing units conducted every other year in odd-numbered years, this special neighborhood sub-sample first randomly selected about 660 housing units from the full AHS that were located in either urban or suburban locations and then interviewed the ten closest neighbors of the initial respondent in these “micro-neighborhoods” in the three waves (1985, 1989, and 1993). While 663 micro-neighborhoods (with 7,531 households) were surveyed in all three waves, supplementary samples of new neighborhoods (to take into account new construction) were sampled in each of the latter waves. Thus, there were a total of 741 micro-neighborhoods in 1989, and 959 micro-neighborhoods in 1993.

The micro-neighborhoods were selected to represent the ten closest housing units to the initially selected unit.<sup>2</sup> The procedure involved identifying the ten units whose front doors were closest to the front door of the initial unit. Distance was based on walking distance taking the most direct route, including through one’s own back yard. Closest units were ones which were “reasonably” accessible to the initial unit; thus, major boundaries such as freeways, rivers, and railroad tracks do not exist *within* a micro-neighborhood. All units in a micro-neighborhood are within one mile of each other (thus, some micro-neighborhoods had less than 11 units). In the case of multi-unit structures, all units on the same hallway were first selected, then the units on the hallway above the unit, then the units on the hallway below the unit.<sup>3</sup>

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<sup>2</sup> The following description of the micro-neighborhoods is based on instructions provided to the canvassers of the AHS (Bureau of the Census 1985).

<sup>3</sup> There might be concern that “micro-neighborhoods” consisting entirely of apartment dwellers in a large building are not representative of a true constitutive unit. For example, about 10% of the micro-neighborhoods were all

Whereas collecting information on the social distance among all individuals in the broader neighborhood provides a challenge due to the intense data requirements, focusing on the social distance among residents in the micro-neighborhood can provide key insights. First, propinquity research has suggested that although individuals can also interact with residents in nearby micro-neighborhoods, most interaction takes place between residents living close by and in the same micro-neighborhood (Caplow and Forman 1950; Festinger, Schachter, and Back 1950; Hipp and Perrin 2009). Second, all households in a particular micro-neighborhood are certainly assessing the crime and disorder in the *same* social area, eliminating the possible bias of aggregating respondents in the same census tract.

#### *Outcome Measure*

There are three outcome measures. For measuring perceived crime, the AHS asks respondents a series of three questions: is crime a problem, is it so much of a problem that it's a bother, and is it such a bother that the respondent wishes to move. These responses were combined into a four point response where the respondent either replies "no" to all questions, replies "yes" to one, "yes" to two, or "yes" to all three. The physical disorder concept is a single yes/no question asking whether "litter or housing deterioration is bothersome." The social disorder concept is a single yes/no question asking whether "people in the neighborhood are bothersome."

We point out that although there is considerable debate whether asking residents of a neighborhood to report on the level of crime or disorder is capturing actual conditions or simply measuring perceptions, we take a different perspective here in arguing that these perceptions are,

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renters, and about 20% had one or fewer owners. To assess this, we estimated ancillary models on a subset of micro-neighborhoods that contained at least 30% owners (about 73% of the micro-neighborhoods). The substantive results were essentially identical (results available upon request).

arguably, of *most* interest. Given that various theoretical models are interested in how residents respond to neighborhood crime or disorder, residents must first *perceive* higher levels of crime or disorder. Even if residents in a neighborhood with only an average level of crime actually perceive a high level of crime, this should still bring about the expected behavioral change *as if* there really was a high level of crime. Thus, defining these situations as real brings about real consequences, as W.I. Thomas suggested (Thomas and Thomas 1928: 572). We acknowledge that we cannot determine whether our measure of social distance increases residents' perceptions of crime because it increases the actual level of crime, or because it simply biases residents into seeing more crime that is not actually there.

*Determinants Included in the Social Distance Measure*

Social distance among residents is measured by using several demographic measures.<sup>4</sup> Economic difference is measured by four variables: household income (natural log transformed since higher levels of income should create social distance at a diminishing rate); homeownership (property ownership leads to different economic interests and concerns); home value (creates wealth differences and was natural log transformed to capture diminishing effects); the size of the home in square feet (captures wealth differences). Education is an important form of social distance in Bourdieu's model (1984) affecting attitudes and values, so we included years of education. We capture race/ethnicity differences by accounting for four categories: African-American, Latino, white, and other race. Life course is measured with age, marital status (married or not), and presence of children at home less than 18 years of age.

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<sup>4</sup> Unfortunately, a few other possibly important determinants are not available in this data set: occupation (class), membership in voluntary organizations, and religious affiliation (and type of religious tradition), are potentially important determinants and provide a fruitful direction for future research. Although including occupation as a determinant would be preferable, the inclusion of income, education, and home value likely account for this to some degree.

Since those born in another country may have different cultural customs creating social distance from their neighbors, we included a measure of the birth country of the respondent. Likewise, the southern region of the U.S. has long been identified for its unique culture (Ellison 1991; Reed 1972), and therefore may create social distance between someone raised in that region and someone who was not. Being raised in an urban area versus a rural area shapes an individual's attitudes and preferences; we therefore included a measure of the type of community the respondent lived in at age 16.<sup>5</sup> We treated this variable as ordinal and determined the amount of distance between two individuals along this continuum: this assumes that someone who grew up in a large city will have some social distance from someone who grew up in a suburb, but much more social distance from someone who grew up on a farm.<sup>6</sup>

#### *Constructing the Social Distance Measures*

These determinants of social distance were combined into a single measure of distance between dyads in the micro-neighborhood. Although prior research has sometimes constructed a social distance measure based on a particular demographic variable, of more theoretical interest is comparing individuals on several determinants *simultaneously*. We constructed a dyadic social distance measure:

$$(1) \quad sd_{ij} = \frac{1}{K} \sum_{k=1}^K | (x_{ik} - x_{jk}) \phi_k |$$

where  $sd_{ij}$  is the social distance between individuals  $i$  and  $j$ ,  $k$  represents the  $K$  number of social determinants being measured,  $x_{ik}$  and  $x_{jk}$  are the values on social characteristic  $k$  for individuals  $i$  and  $j$  respectively,  $\phi_k$  is the salience of social characteristic  $k$  (a weighting factor for its relative

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<sup>5</sup> This variable includes the following possible categories: 1) a large city; 2) suburb near a large city; 3) a medium sized city/suburb; 4) a small city; 5) a town or village; 6) open country but not a farm; 7) farm; 8) other.

<sup>6</sup> The constructs in this paragraph were only available in the 1985 sample, so we are unable to include these determinants of social distance in the two later waves.

importance), and  $i \neq j$ .<sup>7</sup> Whereas greater empirical evidence might allow weighting  $\phi_k$  differently for each measure, we adopted the simplest assumption of weighting them equally.

Calculating this social distance value for each dyad in the neighborhood yields a matrix of social distances between dyads. By then treating this as a non-directional valued network, there are various social distance measures that can be constructed from this matrix to statistically characterize these network structures.<sup>8</sup> To measure a household's average distance from its neighbors, the row average is computed (with the exception of the diagonal element, which is always zero since it represents the household's distance from itself).

A commonly used measure recommended by Blau (1977) to capture group cohesion is the density of ties in a network. This is the average social distance among all dyads in the micro-neighborhood (Wasserman and Faust 1994: 181):

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<sup>7</sup> Various approaches can be taken with continuous variables. One approach for variables with non-negative values is to divide the variable by the maximum value to place it onto a zero-one metric before performing this calculation. Another approach is to standardize the variable by dividing it by its standard deviation. We adopted this latter approach with the additional constraint of providing a ceiling value of 2. While subsidiary analyses without this ceiling showed very similar results, we prefer the ceiling conceptually since: 1) it constrains differences to two standard deviations, beyond which difference likely has little effect; 2) this puts the variables on the same metric as the race variables (since the race variables all are zero-one, two persons of different race will get a value of two for difference: one for the race of the first respondent, and one for the race of the second respondent). This strategy minimizes the possibility of outliers on any particular determinant of social distance unduly influencing the measure.

<sup>8</sup> To define these network terms: network ties can be either directional (where we know that A does something to B, e.g., provides help), or nondirectional (where we only know an association between A and B, e.g., they are friends). Network ties are often considered "nonvalued" (only a dichotomous measure of the presence or absence of a tie); in other instances when they are "valued" the strength of the tie is given (this can be as a count variable, as a proportion on a zero to one scale, or even a valence containing both positive and negative values) (Wasserman and Faust 1994).

$$(2) \quad sd = 1/(M * (M + 1) / 2) [ \sum_{i=1}^M \sum_{j=1}^M \frac{1}{K} \sum_{k=1}^K | (x_{ik} - x_{jk}) \phi_k | ]$$

where all terms are defined as before,  $i < j$  (we only need to compute the values below the diagonal of this symmetric matrix since the social distance between  $i$  and  $j$  is the same as that between  $j$  and  $i$ ),  $[M*(M+1)/2]$  is the number of dyads in the neighborhood and  $sd$  is measuring the average social distance for the entire micro-neighborhood. Thus smaller values would indicate neighborhoods with very little social distance among the residents.

The variance of these dyad distances gives an indication of the amount of dispersion in the network (Wasserman and Faust 1994: 182). This is calculated by computing the variance of these distance measures for the micro-neighborhood:

$$(3) \quad sd_{var} = [ \sum_{i=1}^M \sum_{j=1}^M (sd_{ij} - sd)^2 ] / [M * (M + 1) / 2]$$

where all terms are defined as before, and  $sd_{ij}$  and  $sd$  are computed as shown in equations 1 and 2 respectively. Low values for this variable indicate a neighborhood in which social distance is relatively equidistant between dyads (such as shown previously in Figure 3), whereas large values indicate a neighborhood with considerable variability in the amount of social distance between dyads (such as in Figure 2). Thus, higher variance suggests the possible presence of subgroups within the neighborhood.

Although there are various strategies available for directly estimating the members of subgroups within a neighborhood (for a more complete discussion, see Wasserman and Faust 1994), we utilized exploratory factor analysis of the individual distances between individuals in the micro-neighborhood to create factors, and then performed an oblique rotation on these factors using an algorithm developed by Bernaards and Jennrich (2005). This clusters individuals into subgroups in the micro-neighborhood based on their social distance from each of the other households. While a noted limitation of factor analysis of sociometric data is that individuals are

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not necessarily assigned to a single group (Wasserman and Faust 1994: 290), we addressed this by assigning a household to the factor in which they have the highest loading. Since we found that for nearly all of the micro-neighborhoods two groups captured the degree of clustering in the micro-neighborhood, and that only in rare instances were three groups needed, we used two-factor solutions for all micro-neighborhoods. Following this, we constructed measures of the average social distance: 1) within the largest group; 2) within the smallest group; and 3) *across* the two groups.

*Control variables at household- and micro-neighborhood-level*

To minimize the possibility of spurious findings we also take into account several other social characteristics of the household that may affect perceived crime and disorder. To take into account gender effects, we included a dichotomous measure coded one for females. SES was captured with measures of household income (logged) and years of education of the respondent. To account for race/ethnicity, we included dichotomous indicators for African-Americans, Latinos, and other race (with whites as the reference category). We accounted for life course effects with a measure of the age of the respondent, dichotomous indicators for marital status (married, divorced, with single/widowed as the reference category), and indicators of whether they have children less than 5 years of age at home, 6 to 12 years of age, and 13 to 18 years of age. To measure community investment we included an indicator of home ownership and the length of time in the residence (log transformed). Note that these measures take into account the differences in individuals reporting on the same neighborhood.

To minimize the possibility of spurious findings for micro-neighborhood social distance, we included measures capturing the socio-demographic composition of the micro-neighborhood. Thus, we included the percent white, the average education of household heads, the average income of household heads, the average length of residence, the proportion homeowners, the

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proportion married, the proportion with children less than 18 years of age, and the average age of household heads. The summary statistics for the variables used in the analyses are shown in Table 1. There was no evidence of collinearity among our predictor variables.

<<<Table 1 about here>>>

## Methodology

Since we have households nested within micro-neighborhoods, we estimated hierarchical models. In this multilevel model, the individual characteristics are at level one and the micro-neighborhood measures are at level two. Thus, for the perceived crime models the level one equation is:

$$(4) \quad y_{ik} = \eta_k + \Gamma X_{ik} + \varepsilon_{ik}$$

where  $y_{ik}$  is the assessment of perceived crime in the neighborhood reported by the  $i$ -th respondent of  $I$  respondents in the  $k$ -th micro-neighborhood,  $\eta_k$  is the latent variable of common perception of crime in the micro-neighborhood,  $X_{ik}$  is a matrix of exogenous predictors with values for each individual  $i$  in micro-neighborhood  $k$ ,  $\Gamma$  shows the effect of these predictors on the subjective assessment, and  $\varepsilon_{ik}$  is a disturbance term. We are asking if individuals with a particular characteristic view *the same* neighborhood as having more or less crime than someone without that characteristic (Sampson, Raudenbush, and Earls 1997). For the dichotomous social and physical disorder measures, we estimated the multilevel models with a logit link.<sup>9</sup>

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<sup>9</sup> All models are estimated in SAS 9.1. The social and physical disorder models are estimated using Proc NLMIXED. Evidence suggests that this quadrature-based estimation is slower, but more reliable, than a penalized Quasi-Likelihood (PQL) approach. To assess the robustness of these results for these two outcomes, we also estimated logistic models with the standard errors corrected for clustering at the micro-neighborhood level: the results are generally very similar. We used the coefficient estimates from the logistic models as the start values for the hierarchical logistic models. Models using these start values—rather than naïve start values of zero—resulted in



The micro-neighborhood-level measures enter the level two equation and extend the initial perceived crime model thusly:

$$(5) \quad \eta_k = \mathbf{B}\mathbf{Z}_k + \beta_{YR}YR_k + \varepsilon_k$$

where  $\eta_k$  represents the common perception of crime in micro-neighborhood  $k$ ,  $\mathbf{Z}$  represents a matrix of variables measured at the level of micro-neighborhood  $k$  including the micro-neighborhood social distance measures,  $\mathbf{B}$  shows the effect of these measures on perceived crime,  $YR$  is an indicator variable for the wave of the survey which has  $\beta_{YR}$  effect on perceived crime, and  $\varepsilon_k$  is a disturbance for micro-neighborhood  $k$ .<sup>10</sup>

Missing data was addressed through the use of multiple imputation (Rubin 1987). Such an approach requires the less stringent assumption of missing at random (MAR) rather than the missing completely at random (MCAR) assumption of listwise deletion. By imputing five datasets, this yields appropriate standard errors that take into account the uncertainty introduced by the nonresponse (Schafer 1997).

## Results

### *Effect of social distance on perceived physical disorder*

We begin by viewing the effects of social distance on perceived physical disorder. Of particular note is the strong evidence that individuals who are more socially distant from their neighbors perceive more physical disorder. A one standard deviation increase in social distance

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a solution with a better fit as judged by the log likelihood. This is consistent with prior work suggesting that quadrature-based methods are sensitive to the start values employed.

<sup>10</sup> We also assessed the robustness of the social distance findings over the three waves by estimating additional models which included an interaction between the wave of the survey and the social distance measure. There was no evidence that these effects differ over the three waves, supporting the decision to pool these waves of data (results available upon request).

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from one's neighbors increases the likelihood of perceiving physical disorder 56 percent ( $\exp(4.233 \cdot .105) = 1.56$ ), as seen in model 1 in Table 2. Since these residents are viewing the same micro-neighborhood, this is strong evidence that greater social distance along these several dimensions increases the likelihood of perceiving physical distance. In ancillary models, there was no evidence for a curvilinear relationship between social distance and perceived physical disorder (results available upon request). As an additional check of the robustness of these results, we estimated a fixed effects model. In the fixed effects specification, *all* unobserved differences between neighborhoods are accounted for by including indicator variables for each of the neighborhoods, providing considerable confidence in the results. A drawback of the fixed effects strategy is that it does not allow estimating the effect of aggregate level social distance on aggregate level crime and disorder—of crucial interest in this study—and thus is only useful here as a robustness check of these individual-level results. It is reassuring to note that the results in such a model were very similar to those presented here for the effect of individual-level social distance (results available upon request).

<<<Table 2 about here>>>

While there is strong evidence in this model that those who are more socially distant from their neighbors perceive more physical disorder, there is no evidence in this same model 1 in Table 2 that the average social distance in a neighborhood increases perceived physical disorder beyond this individual-level effect. This does not mean that social distance is not important—indeed, a model not including the individual-level measure of social distance found that aggregate social distance increased aggregate-level physical distance (results not shown)—but rather that it is only those who are more isolated in the neighborhood that perceive more physical disorder, and not a more general effect in which such disorder is perceived by all residents. As

well, there is no evidence of a curvilinear relationship between micro-neighborhood social distance and perceived physical disorder in the neighborhood, as seen in model 2 of Table 2.

Despite the lack of evidence of a linear or curvilinear relationship, we do see subgroup effects. When including a measure of the variance of social distance in the micro-neighborhood in model 3, its strong negative effect on the common perception of physical disorder implies such subgroup effects. A one standard deviation increase in the variance of social distance in the micro-neighborhood decreases the likelihood of perceiving physical disorder 12.5 percent ( $\exp(-9.9499 \cdot .014) = .875$ ). Recall that increasing variance in the micro-neighborhood's social distance implies a micro-neighborhood like the one depicted in Figure 2.

The explicit estimation of the effect of subgroups in model 4 of Table 2 makes their effect clear. The positive effects for the average social distance within the larger and the smaller subgroups suggests that micro-neighborhoods with two tightly cohesive subgroups based on social distance will have less overall commonly perceived physical disorder. And the negative coefficient for the average social distance across these subgroups suggests that more sharply delineated subgroups based on social distance actually results in *less* perceived physical disorder. These combined results imply that a micro-neighborhood with two subgroups with minimal social distance *within* each of them (though wider social distance *between* them) will perceive less physical disorder. This is precisely the type of micro-neighborhood depicted in Figure 2.

#### *Effect of social distance on perceived social disorder*

We see a similar pattern for the relationship between social distance and perceived social disorder. There is again a strong individual-level effect in which more socially distant residents perceive more social disorder in the neighborhood than their neighbors as seen in model 1 of Table 3. A one standard deviation increase in a resident's social distance from their neighbors increases their perception of social disorder 42 percent ( $\exp(3.332 \cdot .105) = 1.419$ ). There is no

evidence of a curvilinear relationship between a household's social distance from their neighbors and their perception of social disorder (results not shown). It is again reassuring to note that these findings were robust when estimating a fixed effects model, suggesting that there are not unobserved neighborhood characteristics that are driving these findings (results not shown).

<<<Table 3 about here>>>

There is no evidence of a linear aggregate effect of micro-neighborhood-level social distance and the common perception of social disorder in model 1 of Table 3. There is also no evidence in model 2 of a curvilinear relationship. Nonetheless, similar to the effects for physical disorder, we again see that the subgroup structure of social distance in the micro-neighborhood has important effects. Increasing the variance of social distance in the micro-neighborhood one standard deviation decreases the perceived social disorder about 9 percent ( $\exp(-6.601 * .014) = .912$ ), as seen in model 3. Again, it is micro-neighborhoods with two cohesive subgroups containing minimal social distance within them and a large amount of social distance between them have the lowest level of commonly perceived social disorder, as seen in model 4.

#### *Effect of social distance on perceived crime*

Turning to the models for perceived crime, although we saw evidence that more socially distant households perceive more *social and physical disorder* than their neighbors, there is no evidence in model 1 of Table 4 that socially distant residents perceive any more *crime* than their neighbors. In ancillary models, there was also no evidence of a curvilinear relationship between a household's social distance from their neighbors and their perception of crime (results not shown). Fixed effects models also found no evidence of either a linear or a curvilinear relationship (results available upon request). Thus, there is no evidence in this large national sample at three time points that households who are more socially distant perceive any more crime than their neighbors.

<<<Table 4 about here>>>

On the other hand, there are important micro-neighborhood-level effects of social distance on the common perception of crime. Once again, there is no evidence of a linear relationship in model 1 of Table 4. Instead, we see strong evidence of a curvilinear relationship in model 2. Micro-neighborhood social distance has an inverted-U relationship with neighborhood perceived crime—which is depicted graphically in Figure 4—illustrating that micro-neighborhoods with a moderate amount of social distance have the least perceived neighborhood crime. These findings are consistent with the notion that a moderate amount of social distance may result in fewer strong ties but more weak ties, creating more bridging social capital that would reduce crime (Bellair 1997).

<<<Figure 4 about here>>>

There is minimal evidence that subgroups are important for fostering commonly perceived crime in the micro-neighborhood. In model 3 the variance of social distance is not significant. In model 4 we see that more social distance within the larger subgroup increases the commonly perceived crime, however, neither the relative closeness of the smaller group nor the distance across the two groups affects perceived crime. Additionally, the lower variance explained at the micro-neighborhood level in this model compared to the model testing a curvilinear relationship (.665 versus .656) is also testament to the limited evidence of subgroup effects for perceived crime.

*Is this simply a race/ethnicity effect?*

Although we have seen evidence that social distance—whether measured at the individual- or micro-neighborhood-level—affects perceptions of crime and disorder, a competing hypothesis is that this is simply a racial/ethnic effect. To test the effect of race/ethnicity at the individual-level, we estimated subsidiary models for each outcome in which we also included a

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measure of the distance of the respondent from his/her neighbors based on race/ethnicity.<sup>11</sup> Importantly, this measure of racial/ethnic distance showed *no* significant effect on any of the constructs, whereas the effect of total social distance remained unchanged (results available upon request). Although this does not discount the importance of race/ethnicity—as racial/ethnic difference was included as part of the measure of total social distance—it highlights the importance of measuring other determinants of social distance as well.

To test whether the micro-neighborhood-level findings are simply due to racial/ethnic difference—rather than the more complicated measure of total social distance—we included a measure of racial/ethnic heterogeneity in the models.<sup>12</sup> It is notable that in none of the models did this measure of racial/ethnic heterogeneity reach significance at the  $p < .05$  level (results available upon request). Equally importantly, none of the conclusions regarding the pattern of results for the total social distance measure were altered in these additional models. Again, this does not discount the importance of racial/ethnic difference in the micro-neighborhood, but simply emphasizes the importance of social distance created due to other characteristics as well.

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<sup>11</sup> This is calculated as the proportion of other micro-neighborhood members not in the same racial/ethnic group as the respondent. Thus, this measure has a value of zero when all other micro-neighborhood members are the same race/ethnicity, and a value of one when all are members of different racial/ethnic groups than the respondent.

<sup>12</sup> We constructed a measure of the ethnic heterogeneity in the micro-neighborhood by using a Herfindahl index (Gibbs and Martin 1962: 670) of the four racial/ethnic groupings—white, African-American, Latino, and other races, which takes the following form:

(1) 
$$H = 1 - \sum_{j=1}^J G_j^2$$

where  $G$  represents the proportion of the population of ethnic group  $j$  out of  $J$  ethnic groups.

## Conclusion

This study has utilized a unique sample design to construct dyad-based measures of social distance between residents in the same micro-neighborhood, and tested the relationship between social distance—both as an individual- and as a micro-neighborhood-level construct—and residents' perceptions of crime and disorder in the neighborhood. By employing a non-rural national sample, this study provides considerable generalizability of the findings. To the extent that social distance among residents affects relationships among residents and their sense of cohesion, it should impact perceived neighborhood crime and disorder. Nonetheless, prior research has focused nearly exclusively on the social distance engendered by race/ethnicity and given less consideration to the social distance fostered by other social characteristics. A key takeaway point of this study is that such a strategy likely misses an important part of the picture.

One key finding of this study is that individuals who are more socially distant from their neighbors—as measured simultaneously along the determinants of race/ethnicity, income, life course, and social background—tend to perceive more social and physical disorder. We know of no studies testing this effect. It should be emphasized that our findings were due to *general* social distance and not simply distance based on race/ethnicity. Ancillary models finding no effect for race/ethnicity distance are consistent with previous studies also finding no significant effect for racial distance alone (Quillian and Pager 2001; Sampson and Raudenbush 2004). Thus, whereas racial/ethnic differences are of crucial importance for many social processes, researchers should not ignore the social distance created by other social characteristics.

Of course, we were unable to measure the possible mechanisms explaining this structural effect. We therefore cannot determine whether this is because such residents are more socially isolated from their neighbors through reduced interaction, or because such residents feel a greater sense of distrust due to the differences with their neighbors, or other possible explanations.

Which actually brings about this greater perception of disorder will need to be explored in future work. Furthermore, the fact that this social distance affects perceptions of disorder, but not perceptions of crime, will need to be explored. It may be that social disorder is a more ephemeral concept, and that residents who are isolated or more mistrusting develop a sense of foreboding and more social disorder in the neighborhood. Such residents may not have reason to also perceive more crime, which generally requires the evidence of specific criminal events.

Beyond such individual-level effects, this study also highlighted the structural effect of micro-neighborhood social distance for perceiving crime and disorder. We emphasize that there was no evidence of a *linear* effect of this structural social distance on commonly perceived crime or disorder. Simple conceptualizations of aggregated social distance uniformly increasing perceptions of neighborhood crime and disorder are clearly inadequate. Instead, the relationship is more nuanced. Common perceptions of physical or social disorder are reduced by the presence of two tightly cohesive groups based on social distance. Again, we are unable to say precisely why this occurs due to not measuring potential mechanisms. On the one hand, this may occur because these subgroups are more conducive to fostering a sense of collective efficacy that enables combating disorder when it appears. While speculative, this suggests that a fruitful research direction would test whether this social distance indeed has a direct effect on the reported collective efficacy of residents in the neighborhood. Another possibility is that such subgroups may help residents cognitively understand various events in the neighborhood: residents who are members of such subgroups may gain assurance from conversations with fellow group members that certain observed events are simply isolated events and not part of a broader pattern. Of course, this assumes that such subgroups actually result in greater social interaction. Although plausible, future research would need to focus explicitly on the extent to which such subgroups translate into social interaction.



The story for commonly perceived crime is consistent with prior theorizing about the role of the broader network structure of ties: whereas micro-neighborhoods with a moderate amount of social distance had lower levels of perceived crime, micro-neighborhoods with very low or very high levels of social distance had *higher* levels of perceived crime. If micro-neighborhoods with low social distance foster a tight bonding structure, this might create numerous strong ties that might impinge on the time allowed for fostering ties with the broader neighborhood. Linking with the bridging versus bonding social capital literature (Bellair 2000; Beyerlein and Hipp 2005; Putnam 2000) micro-neighborhoods with very low social distance may create a bonding social capital that does not link to the broader neighborhood, whereas micro-neighborhoods with moderate levels of social distance may enhance the creation of numerous weak ties that allow the residents time to foster ties with others in the broader community beyond their local micro-neighborhood (Gans 1962; Granovetter 1973). Although speculative given the lack of data on network ties in these analyses, the findings were nonetheless consistent with this hypothesis and suggest a fruitful avenue for future research.

This study has called into question the assumption of the social disorganization theory that race/ethnicity is the sole characteristic that fosters the sort of social distance that might affect relations and cohesion within neighborhoods and hence their perceptions of crime or disorder. Instead, a general measure combining several determinants of social distance proved a more adequate explanation of both perception of disorder on the part of individual households compared to their neighbors, as well as the commonly perceived crime and disorder of all households in the micro-neighborhood. Nonetheless, future research will want to test whether these components of social distance—race/ethnicity, economic resources, stage of life course, or social background—are all equally important for fostering this social distance between neighbors. Whether certain of these components are more important than others, or whether

certain combinations of cross-cutting social distance are more important than others, are important avenues for future research.

A limitation of this study was focusing on the social distance among households only in a micro-neighborhood. Although we argued certain advantages of this aggregated unit, this strategy was nonetheless in part due to data limitations. Although future research may wish to measure the social distance in the broader neighborhood, this poses quite a data collection challenge as it requires a complete census of an area even larger than the local micro-neighborhood. This may suggest a need for numerous such studies focused on single cities to appropriately tease apart these relationships.

In conclusion, this study has provided unique insight into social patterns using novel data and raises provocative questions. Social distance likely affects social interactions as well as the trust and perceptions among residents. The general importance of social distance for crime and disorder in a nonlinear fashion raise important theoretical questions. While homophily remains a powerful process—and indeed, the findings here showed that those who are more socially distant from their neighbors perceived more social and physical disorder than their neighbors—the evidence suggests that at an aggregate micro-neighborhood level, a simple linear relationship does not describe this relationship. The pattern of moderate social distance at the micro-neighborhood level leading to less perceived crime hints at a possible weak tie effect, and the pattern of two distinct subgroups in the micro-neighborhood leading to less perceived physical and social disorder hints at a possible interrelation between network ties and the cohesion fostered by such groups. Such micro-structures within a micro-neighborhood may well have important implications for how residents interact with their local social world, as well as how they perceive it.

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## Tables and Figures

Table 1. Summary statistics for variables used in analyses

<b>Outcome measures</b>	<b>Mean</b>	<b>SD</b>
Average perception of crime	0.581	0.950
Proportion perceiving social disorder	0.165	0.345
Proportion perceiving physical disorder	0.069	0.223
<b>Social distance measures- individual</b>		
Social distance	0.465	0.105
<b>Social distance measures- micro-neighborhood</b>		
Average social distance	0.465	0.079
Variance of social distance	0.038	0.014
Average social distance in larger subgroup	0.376	0.080
Average social distance in smaller subgroup	0.418	0.095
Average social distance across subgroups	0.588	0.111
<b>Household measures</b>		
Female	0.561	0.475
Age	0.038	17.422
African-American	0.136	0.343
Latino	0.085	0.279
Other race	0.007	0.082
Education	12.834	3.099



## Micro-neighborhood social distance and perceived crime/disorder

Household income	3.255	2.923
Length of residence (logged)	1.877	1.169
Married	0.508	0.500
Number of children 0-5 years old	0.207	0.519
Number of children 6-12 years old	0.234	0.562
Number of children 13-18 years old	0.193	0.492
Owner	0.574	0.483
<b>Micro-neighborhood measures</b>		
Common perception of crime	0.581	0.504
Common perception of social disorder	0.165	0.141
Common perception of physical disorder	0.069	0.087
Average age	48.723	8.941
Proportion white	0.735	0.321
Average education	12.834	1.837
Average income	3.255	1.797
Average length of residence	1.877	0.622
Proportion married	0.508	0.241
Proportion with children, 0-18 years old	0.585	0.505
Proportion owners	0.574	0.355

*N* = 26,495 household time points, 2,357 micro-neighborhood time points.

Micro-neighborhood social distance and perceived crime/disorder

Table 2. Determinants of perceived physical disorder, including micro-neighborhood-level and tract-level measures of neighborhood composition. American Housing Survey special neighborhood sub-sample, 1985, 1989, 1993

	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>
<b>Social distance at neighborhood level</b>				
Average social distance	-0.081 (-0.17)	-0.307 (-0.10)	0.542 (1.10)	
Average social distance squared		0.101 (0.03)		
Variance of social distance			-9.499 ** (-4.36)	
Average social distance in larger subgroup				1.344 * (2.44)
Average social distance in smaller subgroup				1.915 ** (4.97)
Average social distance across subgroups				-2.041 ** (-4.34)
<b>Social distance at household level</b>				
Social distance	4.233 ** (13.27)	4.277 ** (13.34)	4.313 ** (13.72)	4.208 ** (13.59)
<i>R-squared: level 2</i>	0.189	0.188	0.217	0.353

\*\*  $p < .01$  (two-tail test), \*  $p < .05$  (two-tail test), †  $p < .05$  (one-tail test). *T-values in parentheses. 26,495 household time points, 2,357 micro-neighborhood time points. Hierarchical Logistic models. All models control for household measures of: gender, age, race/ethnicity (African-American, Latino, other race), years of education, household income, length of residence (logged), married, number of children 0-5 years of age, 6-12 years of age, and 13-18 years of age, homeowners. All models control for micro-neighborhood measures of proportion white, average years of education, average household income, average length of residence, proportion homeowners, proportion married, proportion with children 0-18 years of age, average age.*

Micro-neighborhood social distance and perceived crime/disorder

Table 3. Determinants of perceived social disorder, including micro-neighborhood-level and tract-level measures of neighborhood composition. American Housing Survey special neighborhood sub-sample, 1985, 1989, 1993

	(1)	(2)	(3)	(4)
<b>Social distance at neighborhood level</b>				
Average social distance	-0.064 (-0.13)	-0.112 (-0.04)	0.346 (0.77)	
Average social distance squared		-0.012 (0.00)		
Variance of social distance			-6.601 ** (-3.62)	
Average social distance in larger subgroup				0.680 (1.49)
Average social distance in smaller subgroup				1.327 ** (3.40)
Average social distance across subgroups				-1.318 ** (-3.69)
<b>Social distance at household level</b>				
Social distance	3.332 ** (8.44)	3.343 ** (8.59)	3.373 ** (9.33)	3.333 ** (8.90)
<i>R-squared: level 2</i>	0.437	0.437	0.447	0.451

\*\*  $p < .01$  (two-tail test), \*  $p < .05$  (two-tail test), †  $p < .05$  (one-tail test). *T-values in parentheses. 26,495 household time points, 2,357 micro-neighborhood time points. Hierarchical Logistic models. All models control for household measures of: gender, age, race/ethnicity (African-American, Latino, other race), years of education, household income, length of residence (logged), married, number of children 0-5 years of age, 6-12 years of age, and 13-18 years of age, homeowners. All models control for micro-neighborhood measures of proportion white, average years of education, average household income, average length of residence, proportion homeowners, proportion married, proportion with children 0-18 years of age, average age.*

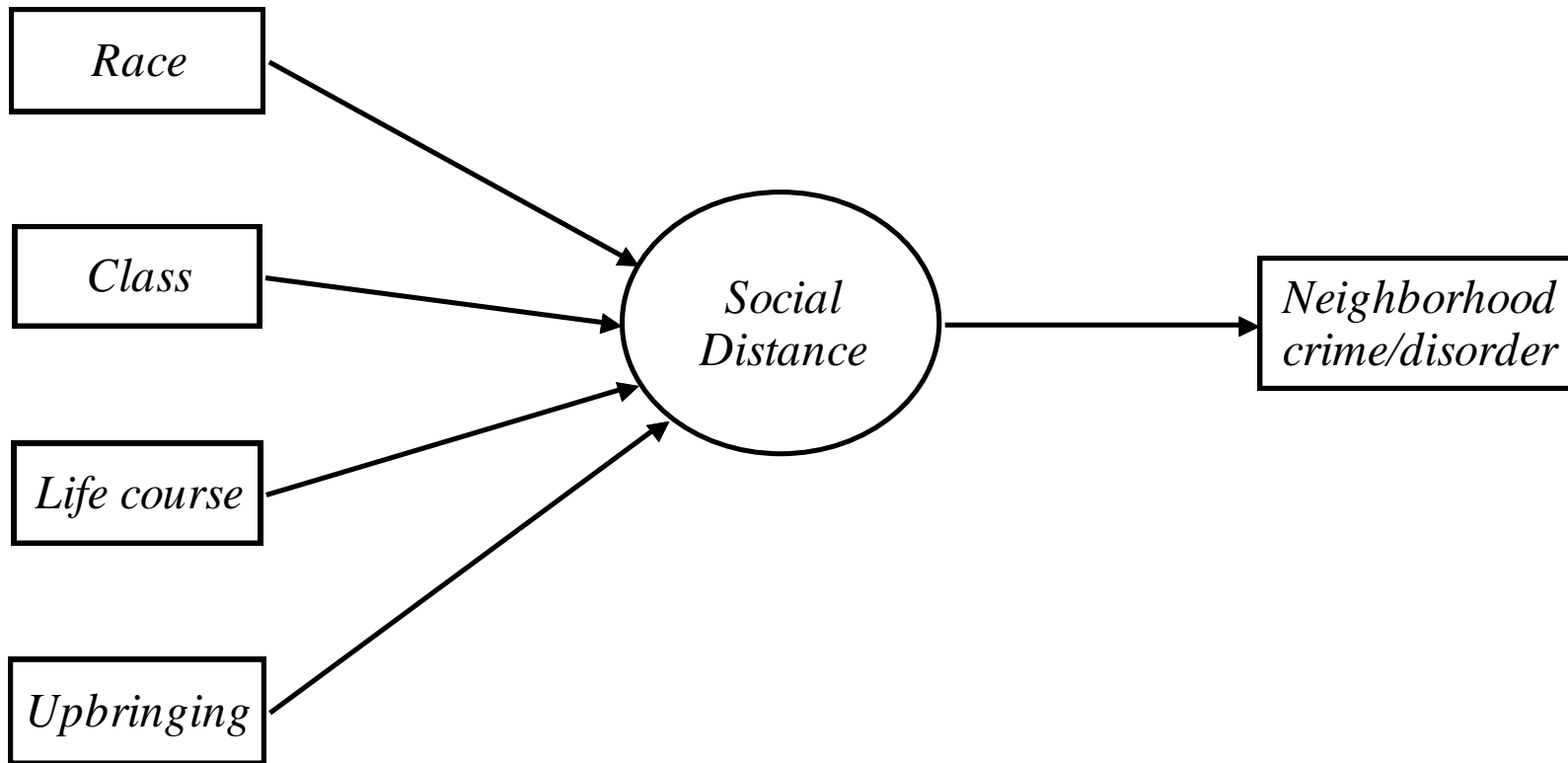
Micro-neighborhood social distance and perceived crime/disorder

Table 4. Determinants of perceived crime, including micro-neighborhood-level and tract-level measures of neighborhood composition. American Housing Survey special neighborhood sub-sample, 1985, 1989, 1993

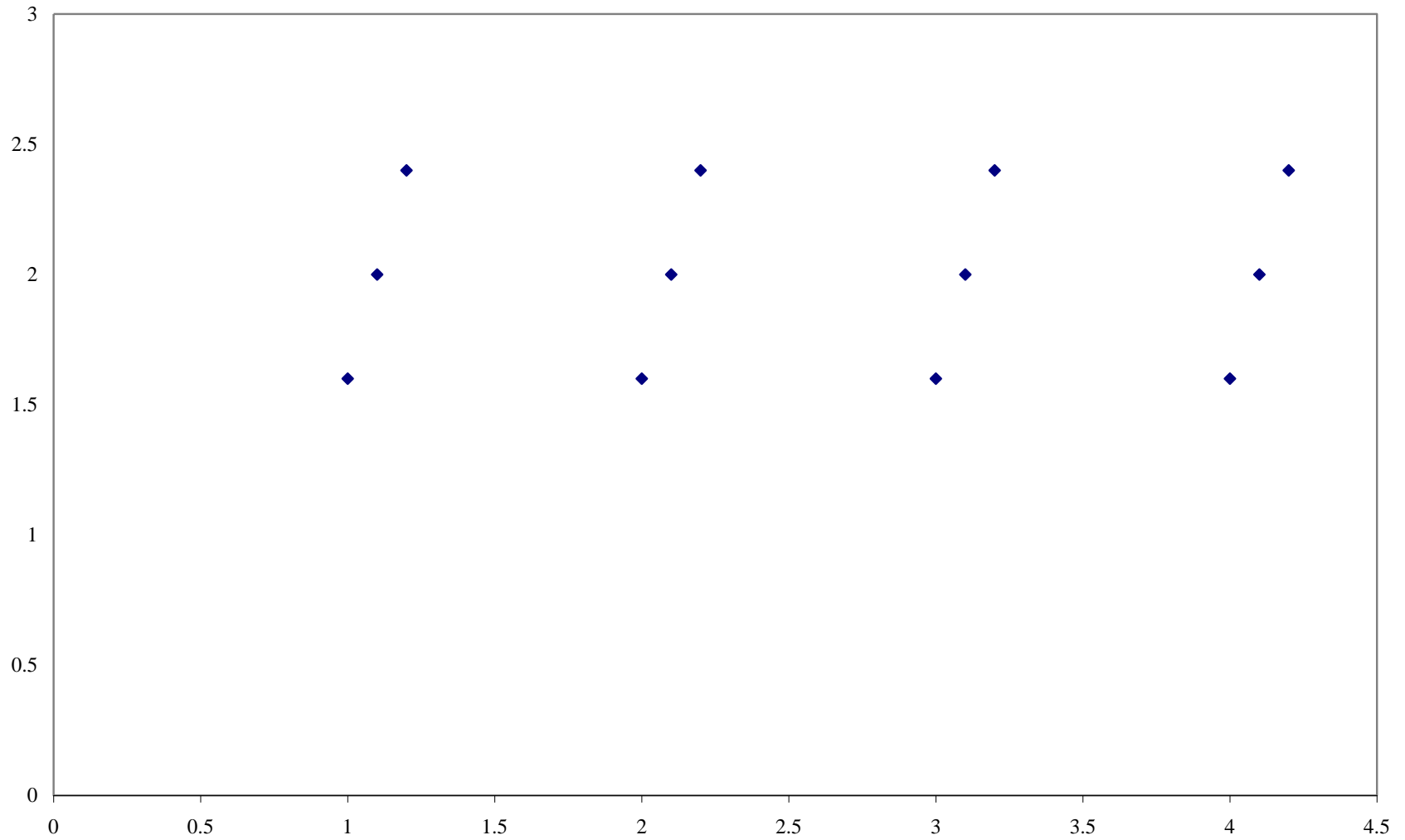
	(1)	(2)	(3)	(4)
<b>Social distance at neighborhood level</b>				
Average social distance	0.410 * (2.46)	-4.050 ** (-3.59)	0.444 * (2.25)	
Average social distance squared		4.851 ** (3.96)		
Variance of social distance			-0.394 (-0.44)	
Average social distance in larger subgroup				0.370 * (1.97)
Average social distance in smaller subgroup				0.077 (0.61)
Average social distance across subgroups				0.008 (0.05)
<b>Social distance at household level</b>				
Social distance	-0.045 (-0.46)	-0.045 (-0.46)	-0.044 (-0.46)	-0.038 (-0.37)
<i>R-squared: level 2</i>	0.658	0.665	0.657	0.656
<i>R-squared: level 1</i>	0.062	0.061	0.062	0.062

\*\*  $p < .01$  (two-tail test), \*  $p < .05$  (two-tail test), †  $p < .05$  (one-tail test). *T-values in parentheses.* 26,495 household time points, 2,357 micro-neighborhood time points. Hierarchical linear models. All models control for household measures of: gender, age, race/ethnicity (African-American, Latino, other race), years of education, household income, length of residence (logged), married, number of children 0-5 years of age, 6-12 years of age, and 13-18 years of age, homeowners. All models control for micro-neighborhood measures of proportion white, average years of education, average household income, average length of residence, proportion homeowners, proportion married, proportion with children 0-18 years of age, average age.

Figure 1 Theoretical determinants of social distance



**Figure 2. Neighborhood with equal social distance among residents**



**Figure 3. Neighborhood with variance in social distance among residents (sub-groups)**

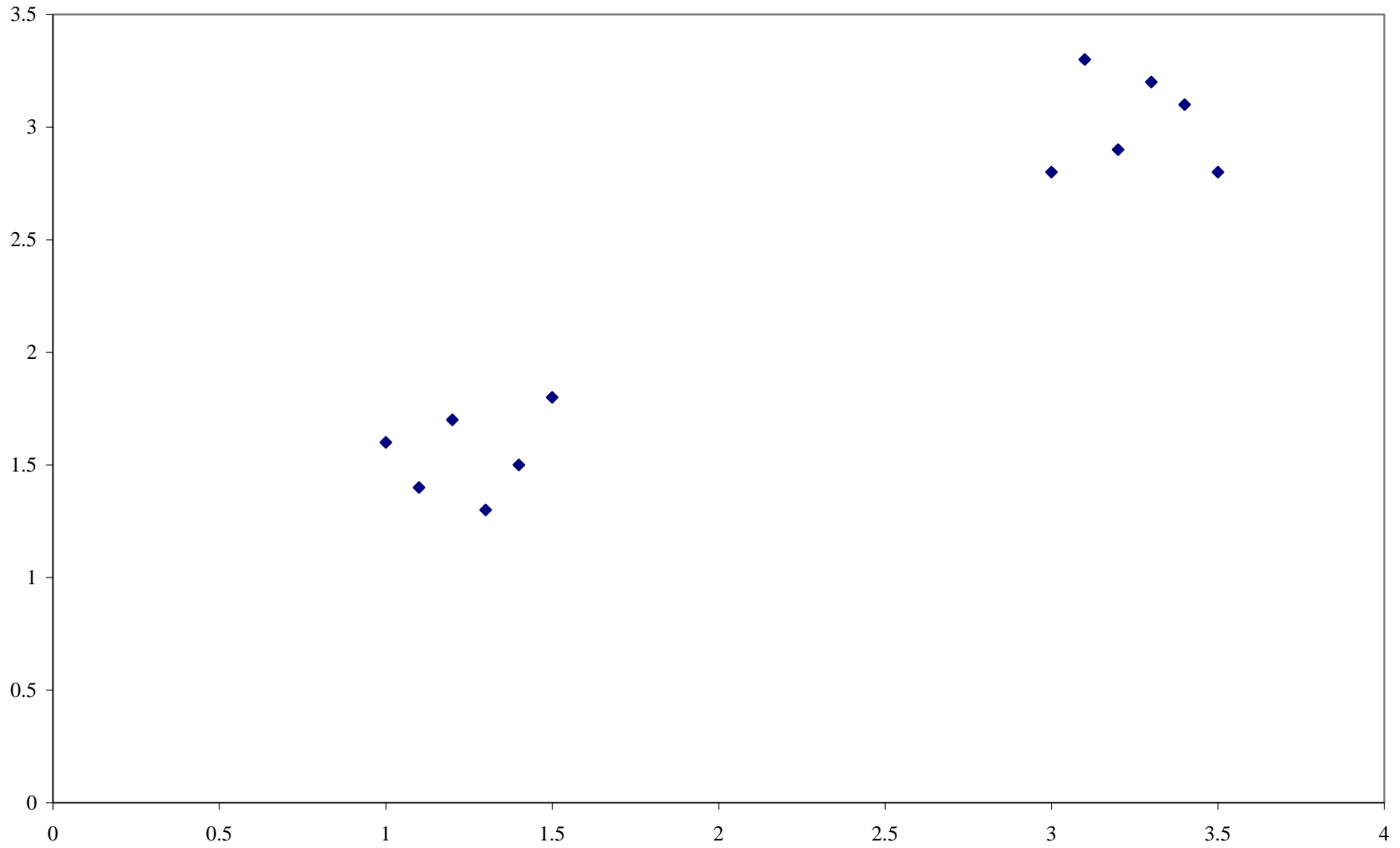


Figure 4. Marginal effect of block social distance on perceived crime

