Stressful Neighborhoods and Depression: A Prospective Study of the Impact of Neighborhood Disorder*

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Quantitative and qualitative research suggests that urban disadvantaged environments may be highly stressful to their inhabitants. Social disorganization may be deleterious to both physical and mental health. The relationships among perceptions of one’s neighborhood, measures of social support and social integration, and level of subsequent depressive symptoms was examined with a community sample of 818 individuals screened for an HIV prevention intervention, most of whom were current or former drug users. After adjusting for baseline levels of depressive symptoms, perceptions of neighborhood characteristics (vandalism, litter or trash, vacant housing, teenagers hanging out, burglary, drug selling, and robbery) predicted depressive symptoms at a 9-month follow-up interview. Measures of social support and social integration, entered as interactions with neighborhood perceptions, did not buffer the effect of neighborhood perceptions. However, CES-D scores at follow-up for frequent church attendees were lower. The data support theories of social disorganization and social stress and suggest the need for structural intervention.

Many studies have found a relationship between lower socioeconomic status and poor physical and mental health (Baum, Garofalo, and Yali 1999; Pickering 1999; Lundberg 1999; Adler and Ostrove 1999; Rios et al. 2001; Turner, Lloid, and Roszell 1999). One explanation for this association is the social distribution of stress, with individuals of lower socioeconomic status tending to reside in impoverished neighborhoods, which are replete with more stressors. These stressors may lead to depression, which has been found to be prospectively associated with cardiovascular disease and other morbidities (MacMahon and Lip 2002; Jiang, Krishnan, and O’Connor 2002; Baldwin and O’Brien 2002; Maddock and Pariante 2001). There also may be a lack of social and economic resources in such neighborhoods to buffer these stressors. Many impoverished urban inner-city neighborhoods in the United States suffer from physical signs of decay such as abandoned buildings, litter, and graffiti. In a series of studies, investigators discovered that a neighborhood’s level of physical disorder, as rated by outside observers, is linked to fear of crime (Taylor, Gottfredson, and Brower 1984; Perkins, Meeks, and Taylor 1992; Perkins and Taylor 1996). Researchers have also linked fear of crime to neighborhood level social disorder such as loitering, public drunkenness, litter, vandalism, and the number of vacant houses (LaGrange, Ferraro, and Supancic 1992; Lewis and Maxfield 1980; Perkins and Taylor 1996). It has been theorized that in some disadvantaged neighborhoods with restricted resources and opportunities, there exists high levels of social disorganization and lack of social control mechanisms sufficient to control deleterious behavior (Lewis and Salem 1981; Skogan 1990). Although the issue of crime and fear of crime has been the focus of much of the discourse on social disorganization, there are

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several cross-sectional studies that have examined the relationship between individual psychological characteristics and neighborhood characteristics. These studies have reported an association between mental health and social disorder (Aneshensel and Sucoff 1996; Ross and Mirowsky 2001; Cutrona et al. 2000; Ross and Jang 2000; Stiffman et al. 1999).

BACKGROUND

Many of these studies have examined the influence of neighborhood characteristics on children or other vulnerable populations. In a study of inner-city adolescents, Stevenson (1998) reported that students who felt safe exhibited lower levels of depressive symptoms, while students who reported lower levels of neighborhood social capital reported higher levels of depressive symptoms. In a study of adolescents in Los Angeles, investigators assessed the relationship between adolescent mental health and ambient hazards, as measured by potential dangers in the neighborhood such as graffiti, drug use and dealing, and violent crimes (Aneshensel and Sucoff 1996). In this study, ambient hazards were found to be associated with four measures of mental health: depression, anxiety, conduct disorder, and oppositional defiant disorder. Ross and Mirowsky (2001) in a multi-level analysis assessed the relationship between neighborhood disadvantage and self-reported health. Perceived neighborhood disorder was found to mediate the relationship between neighborhood conditions, measured at the census tract level, and self-reported health, while controlling for individual socioeconomic characteristics. The authors theorize that fear of crime (being robbed or otherwise physically threatened) is the primary mechanism linking neighborhood disorder and health.

In another study, Boardman and colleagues (2001) examined the relationship between neighborhood and individual level characteristics using data from the Detroit Area Study. Neighborhood disadvantage was calculated by census tract variables of standardized summed scores for percent below poverty line, percent female head of household, percent male unemployment, and percent families on public assistance. Neighborhood disadvantage was found to be associated with illicit drug use in the prior year. An interaction showed a stronger association between neighborhood disadvantage among low-income individuals versus higher income individuals, suggesting a buffering effect of individual economic resources.

Investigators have also examined the relative influence on mental health of perceived versus actual neighborhood characteristics. Hadley-Ives and colleagues (2000) examined the relationship between perceived and actual neighborhood characteristics and mental health and discovered that perceived characteristics had a much stronger association to mental health status than measures of actual neighborhood characteristics. Ross (2000), in a multi-level study, found that higher levels of neighborhood disadvantage were associated with higher levels of depression; however, when perceived neighborhood disorder was entered into the models, the statistical significance of neighborhood disadvantage was lost. One limitation of such cross-sectional studies of neighborhood characteristics is that depression may alter perceptions and lead to greater recall of mood congruent information such as physical and social disorder and fear of crime (Murray, Whitehouse, and Alloy 1999; Watkins et al. 1996; Watkins, Martin, and Stern 2000; Watkins et al. 1992).

Major contributing factors to social disorder in urban disadvantaged neighborhoods are illicit drug use and drug purchasing (Brunswick 1985; Li, Stanton, and Feigelman 1999; Wilson 1987). The association between illicit drug use and criminal activities is well established (Nurco et al. 1989; Hanlon et al. 1990; Nurco 1998). In inner city neighborhoods with high levels of drug use and crime, it may not be easy to categorize individuals as victims or perpetrators. Substance abusers are often both (Amaro et al. 1990; Siegal et al. 2000). The present SHIELD (Self-Help In Eliminating Life-threatening Disease) study was a network oriented HIV prevention intervention targeting drug users. Many of the participants were current drug users, and all were recruited from inner-city neighborhoods.

In the current study we prospectively examined the relationship between ratings of neighborhood social disorganization and subsequent levels of depressive symptoms. We utilized a social stress and coping framework which emphasizes networks and voluntary organizations as potential sources of support and drug use and neighborhood characteristics as poten-
tial chronic stressors. In a review of the stress literature, Aneshenel (1992) suggested that a primary research task was to identify stressors that are attributable to social organization. Pearlin (1989) has also emphasized the importance of understanding the social context of the stress process and labeled as "ambient strains" environmental stressors such as poverty and living in neighborhoods where residents are fearful of violent crime. He suggests that what may appear to be a discrete stressor, such as a life event, is usually not independent of other stressors. Such events are often markers for an array of stressors. Turner and colleagues have reported that chronic stress, recent life events, and lifetime traumas are all associated with depression (Avison and Turner 1988; Turner and Lloyd 1995). Chronic stressors as compared to stressors of shorter duration were found to have a stronger association with depression. However, neighborhood characteristics were not included in their assessment of chronic stressors. From the perspective of social disorganization theory, neighborhood level stressors are clustered, and highly impoverished neighborhoods may be the source of numerous chronic stressors.

The second component of our model focused on social resources. Social support networks have been conceptualized as social resources that directly bolster mental health or may be drawn upon to deal with stressors (Aneshensel and Stone 1982; Lin, Ye, and Ensel 1999; Lin and Ensel 1984; Pearlin 1989). In addition to emotional and instrumental support garnered from individuals, social institutions may be a source of support. Ross and Jang (2000) found that involvement in neighborhood organizations did not buffer the effect of neighborhood disorder on levels of fear of victimization and distrust of others. Reported participation in these organizations was low. One of the major social institutions in many African-American inner-city environments is the church (Lincoln and Mimiya 1991). An analysis of the data from the National Survey of Black Americans, a nationally representative sample, found that 84 percent of African Americans consider themselves religious, and 78 percent pray often (Billingsley and Caldwell 1991). While some studies have found that church attendance is protective of depression, other studies have not found a relationship (Ellison 1995; Koenig et al. 1997).

Numerous studies have found that social support has either a direct effect or a stress buffering effect on mental health (Johnson et al. 1999; Frese 1999; Hagerty and Williams 1999; Peterson, Folkman, and Bakeman 1996). Differences by socioeconomic status, race, and gender in the relationship between social support and mental health have been documented (Aneshensel 1992). One of the difficulties in disentangling the relationships among support, stress, and health is that different investigators have used different conceptualizations and measurements of these constructs and have assessed them in different social contexts. Ross and Jang (2000) found that social support, as measured by informal ties with neighbors, buffered the effect of neighborhood disorder on fear of crime and general distrust. Boardman and colleagues (2001) did not find that social resources, as measured by family contact, positive social support, and negative social support, had a direct effect or that they buffered the effect of neighborhood disadvantage on drug use. D'Imperio, Dubow, and Ippolito (2000) reported that internal resources, which include coping skills, perceived competence, and social support, did not buffer neighborhood disadvantage among youth. Few studies have examined whether the same process of environmental stressors and social support holds in extremely disadvantaged neighborhoods.

**RESEARCH PROBLEM**

For our study, we sought to answer two questions. (1) Is social disorganization an important chronic stressor that leads to higher levels of depressive symptoms in inner-city environments? And (2) is there a main effect or buffering effect of social support among persons living in high crime areas with high levels of environmental stress? As assessments of chronic stress and depressive symptoms have been confounded in many studies, the present study examined the effects of neighborhood conditions on depressive symptoms measure nine to twelve months later.

We hypothesized that participants from neighborhoods that are decaying and have outward signs of disorder would experience greater uncontrolled stress and symptoms of depression. We were also interested in examining the question of whether social disorganiza-
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Perception has the same impact on drug users as non-users. We anticipated that individuals who use illicit drugs would perceive more social disorganization than non-drug users due to their frequent activities on the streets, and that this would in turn influence their chance of depressive symptoms. According to an adaptation hypothesis, individuals may become accustomed to crime and habituate to their neighborhood conditions. We also hypothesized that measures of social support would buffer, to some extent, the effect of neighborhood perceptions on depressive symptoms.

METHODS

Recruitment

Participants in the Self-help in Eliminating Life-threatening Disease project were recruited through targeted outreach in 1997. High drug use areas in Baltimore, Maryland were identified through ethnographic observations, focus groups, and geographical coding of drug-related arrests in Baltimore in a prior three-year period. Street-based recruitment was used, and flyers describing the study were disseminated in the targeted areas. The flyers provided a brief written description of the study and a toll-free phone number to call. Potential participants were briefly screened over the phone or in the clinic. Study inclusion criteria were: (1) being 18 years or older; (2) having at least weekly contact with drug users; (3) willingness to participate in AIDS outreach education; (4) willingness to bring into the clinic two of their social network members; and (5) not being enrolled in other behavioral HIV prevention studies. Potentially eligible individuals were asked to come to the clinic to be re-screened, to provide informed consent (approved by the Johns Hopkins School of Public Health’s Institutional Review Board (#H.30.00.07.17.A), and to complete a face-to-face baseline interview. All participants were financially compensated for their time.

Survey Assessments

Baseline interviews were administered between August 1997 and March 1999. There were 79 respondents who re-screened ineligible and were not administered a baseline interview. Follow-up interviews were conducted nine months after the baseline interview. Eight-hundred-thirty-eight participants were administered a follow-up interview. We were able to interview 533 (87%) of those who were actively followed-up. An additional group of 305, who we did not actively follow-up because they were not eligible for the intervention component of the study, returned for the second interview, giving an overall 72 percent return rate. Eighteen participants died between baseline and follow-up.

Measures

All measures, with the exception of depression at follow-up, are from the baseline interview. At baseline a seven-item, three-point scale that assessed perceptions of neighborhood, based on Perkins and Taylor’s Block Environmental Inventory (Perkins et al. 1992) was administered. Participants were asked if seven items were “not a problem,” “somewhat of a problem,” or a “big problem” on their block: vandalism, litter or trash in the streets, vacant housing, groups of teenagers hanging out on the street, burglary, people selling drugs, and people getting robbed on the street. The neighborhood scale had a Cronbach’s alpha of .89, indicating good scale reliability. In a prior study, Perkins and Taylor (1996) found high level of agreement between the residential surveys of social disorder and independent observations. The correlations ranged from .41 to .72.

At baseline and follow-up depressive symptoms were assessed using the Centers for Epidemiological Studies Depression Scale (CES-D) (Radloff 1977), a 20-item, four-point scale developed for use in the general population. The scale has high validity and reliability (Radloff and Locke 1986). The CES-D has been shown to have a high sensitivity for the Diagnostic and Statistical Manual of Mental Disorders Version Four for major depression, and an adequate specificity as a screening instrument for depression (Zimmerman and Coryell 1988). A cut-off score of 16 or greater has been validated as an indication of probable clinical depression (Boyd et al. 1982). The Cronbach’s alpha for this measure was .90 at baseline and .91 at follow-up.

Social support was measured with a social network inventory based on five perceived
support domains: emotional assistance, financial assistance, physical assistance, information, and social participation (Barrera 1980). Prior research has demonstrated the concurrent and predictive validity of this network inventory (Latkin et al. 1996). The total number of persons in the support network was used as an index of social support. Social support and social integration were also assessed with two measures: having a main partner, and frequency of attending church.

Analysis

Data analysis was accomplished in three steps. First, all variables were examined for outlying values, and variables with highly skewed distributions were dichotomized for ease of analysis. Age, education, the neighborhood perceptions scale, number in support network, years of education, and CES-D at baseline and follow-up were used as continuous variables, while gender, main partner status, injecting drugs in the past six months, and residential stability were dichotomized. Second, a Spearman correlation matrix was used to assess the relationships among the neighborhood scale items and CES-D score at follow-up. Finally, a sequence of linear regression models, including models with all two-way interactions, was fitted. Non-significant interactions were removed one at a time using the “principle of conditional error.” To test whether this approach eliminated potentially significant interactions of interest (namely the neighborhood perceptions scale interactions with measures of social support and integration), separate models were fit examining only these interactions. We also plotted the observed and fitted values to assess the overall fit of the final models.

RESULTS

We excluded 20 participants due to missing data, leaving an analysis sample of 818. As seen in Table 1, this is a highly impoverished population. Most had experienced unemployment in the past six months (85%), most earned less than $500 in the previous month (69%), many had been arrested in the previous year (41%), and a significant percentage reported being homeless in the previous six months (17%). Few individuals were married (7%), but most reported having a main partner (66%), and many reported attending church at least once in the previous week (24%). About half (47%) reported injecting illicit drugs in the previous six months, 41 percent reported smoking crack, 43 percent reported sniffing

<table>
<thead>
<tr>
<th>Variable</th>
<th>Percent</th>
<th>Number</th>
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<tbody>
<tr>
<td>Male gender</td>
<td>57.5</td>
<td>818</td>
</tr>
<tr>
<td>Have main partner</td>
<td>66.4</td>
<td>818</td>
</tr>
<tr>
<td>Married</td>
<td>6.7</td>
<td>818</td>
</tr>
<tr>
<td>Been homeless in past 6 months</td>
<td>17.0</td>
<td>817</td>
</tr>
<tr>
<td>Been unemployed in past 6 months</td>
<td>85.0</td>
<td>818</td>
</tr>
<tr>
<td>Income less than $500 per month</td>
<td>69.2</td>
<td>817</td>
</tr>
<tr>
<td>Arrested in past year</td>
<td>41.2</td>
<td>772</td>
</tr>
<tr>
<td>Injected drugs past 6 months</td>
<td>47.4</td>
<td>818</td>
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<tr>
<td>Sniff heroin past 6 months</td>
<td>43.0</td>
<td>797</td>
</tr>
<tr>
<td>Sniff cocaine past 6 months</td>
<td>18.2</td>
<td>793</td>
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<tr>
<td>Smoked crack past 6 months</td>
<td>40.7</td>
<td>799</td>
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<tr>
<td>Attended church at least once in past week</td>
<td>23.5</td>
<td>818</td>
</tr>
<tr>
<td>At least high school education</td>
<td>51.7</td>
<td>818</td>
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<tr>
<td>Neighborhood Perception Scale Items</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vandalism</td>
<td>49.4</td>
<td>818</td>
</tr>
<tr>
<td>Vacant housing</td>
<td>61.6</td>
<td>818</td>
</tr>
<tr>
<td>Litter or trash on streets</td>
<td>68.7</td>
<td>818</td>
</tr>
<tr>
<td>Groups of teenagers</td>
<td>78.7</td>
<td>818</td>
</tr>
<tr>
<td>Burglary</td>
<td>45.3</td>
<td>799</td>
</tr>
<tr>
<td>Selling drugs</td>
<td>83.2</td>
<td>813</td>
</tr>
<tr>
<td>People getting robbed</td>
<td>65.2</td>
<td>812</td>
</tr>
</tbody>
</table>

Note: Percent reported for the Neighborhood Scale is the percent answering “somewhat of a problem” or “big problem.”
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heroin, and 18 percent reported sniffing cocaine. The mean age was 39.2 years, the mean number of support network members was 6.7, the mean CES-D score at baseline was 19.2, and the mean neighborhood perceptions scale score was 7.1, with a range of 0–14 and a standard deviation of 4.3.

The seven measures of neighborhood characteristics were significantly and highly correlated. The Spearman correlations ranged from .42 to .72. Most of the participants reported high levels of social disorder within their neighborhood. For six out of the seven neighborhood items, the majority of participants responded “somewhat of a problem” or “big problem.” Current drug use was only associated with two of the neighborhood characteristics: selling drugs and groups of teenagers hanging out on the street. CES-D scores at follow-up were modestly correlated with all neighborhood items (see Table 2). At baseline, the mean and median CES-D scores for drug users were 19 and 19, and for non-drug users 18 and 14. At follow-up, the mean and median CES-D scores for drug users were 17 and 16, and for non-drug users 17 and 17.

The next set of analyses examine the association between all variables and depression at follow-up using multiple linear regression models. All continuous variables were tested for skewness or for an otherwise non-normal distribution. Upon examination of residual plots, transformation of the data was not necessary (i.e., there was no heteroscedacity.) We tested a sequence of models in which demographic variables, network and drug use variables, the neighborhood perception items, the neighborhood perception scale, and CES-D at baseline was entered sequentially. These models are presented in Table 3. Due to collinearity, the individual neighborhood perception items could not be simultaneously entered into a model. To test the hypothesis that measures of social support could buffer the effect of neighborhood perceptions on depression, we entered two-way interaction terms between the neighborhood perceptions scale and the three measures of social support (church attendance, number in support network, having a main partner). None of these terms approached statistical significance or showed any evidence of a buffering effect. Additionally, all two-way interactions (45 total) were tested with CES-D score modeled as a continuous variable; none were found to be statistically significant.

A higher level of education, male gender, and greater frequency of church attendance were significantly associated with lower CES-D scores at follow-up (Table 3). Higher scores on the perceptions of neighborhood scale were significantly associated with higher CES-D scores at follow-up. Age, having a main partner, and the size of social support network entered as main effects were not associated with depression at follow-up. Model 5 of Table 3 shows that education, gender, church attendance and perceptions of neighborhood continued to predict depression, even after adjusting for baseline levels of depressive symptoms. Accounting for baseline levels of depressive symptoms reduced the slope of the Neighborhood Perceptions Scale by about one half.

To test whether exclusion of participants who had not lived in the same place from the baseline to the follow-up surveys would impact the relationship between the neighborhood perceptions scale and risk of depression, we conducted a separate analysis with the 573 participants who had lived in the same place at both time points. The parameter estimates remained the same with almost identical confidence intervals and p-values. We also examined the effect of the neighborhood perceptions scale adjusted only for baseline depression, while excluding participants who did not

### Table 2. Spearman Correlation Coefficients for Neighborhood Perception Scale Items in the SHIELD Study (787 participants with no missing items)

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
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<tr>
<td>Vandalism (1)</td>
<td></td>
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<td></td>
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<tr>
<td>Vacant housing (2)</td>
<td>.61***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Litter or trash on streets (3)</td>
<td>.51***</td>
<td>.61***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Groups of teenagers (4)</td>
<td>.47***</td>
<td>.56***</td>
<td>.58***</td>
<td></td>
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<tr>
<td>Burglary (5)</td>
<td>.55***</td>
<td>.48***</td>
<td>.48***</td>
<td>.44***</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Selling drugs (6)</td>
<td>.44***</td>
<td>.55***</td>
<td>.57***</td>
<td>.74***</td>
<td>.42***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>People getting robbed (7)</td>
<td>.53***</td>
<td>.52***</td>
<td>.55***</td>
<td>.57***</td>
<td>.58***</td>
<td>.59***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CES-D Time 2 (8)</td>
<td>.13***</td>
<td>.10**</td>
<td>.09*</td>
<td>.16***</td>
<td>.12**</td>
<td>.16***</td>
<td>.17***</td>
<td></td>
</tr>
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</table>

*p < .05; **p < .01; ***p < .001
Table 3: OLS Regression Model Beta Estimates for CES-D score at Time 2 among 805 participants in the SHIELD Study

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
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</thead>
<tbody>
<tr>
<td>Male gender</td>
<td>-3.66**</td>
<td>-4.19**</td>
<td>-4.29**</td>
<td>-3.84**</td>
<td>-2.56**</td>
</tr>
<tr>
<td>Education</td>
<td>-1.03**</td>
<td>-0.93**</td>
<td>-0.93**</td>
<td>-0.92**</td>
<td>-0.48*</td>
</tr>
<tr>
<td>Age</td>
<td>0.03</td>
<td>0.01</td>
<td>0.05</td>
<td></td>
<td></td>
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<tr>
<td>Lived in residence &gt; 3 years</td>
<td>-1.42</td>
<td>-1.52</td>
<td>-1.36</td>
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<td></td>
</tr>
<tr>
<td>Have main partner</td>
<td>-1.54</td>
<td>-1.54</td>
<td>-1.09</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Injected drugs past 6 months</td>
<td>1.04</td>
<td>1.04</td>
<td>0.86</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Church attendance at least in past week</td>
<td>-2.67**</td>
<td>-2.63**</td>
<td>-2.70**</td>
<td>-1.73*</td>
<td></td>
</tr>
<tr>
<td>Number in support network</td>
<td>-0.16</td>
<td>-0.17</td>
<td></td>
<td></td>
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<tr>
<td>Neighborhood perceptions scale</td>
<td></td>
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<td>CES-D score at Time 1</td>
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<tr>
<td>R-Square</td>
<td></td>
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<tr>
<td>Adjusted R-Square</td>
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<td>0.09</td>
<td>0.09</td>
<td>0.31</td>
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<tr>
<td>F-Statistic</td>
<td>12.20</td>
<td>8.12</td>
<td>10.26</td>
<td>20.79</td>
<td>74.04</td>
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<tr>
<td>p-value for F-Statistic</td>
<td>&lt;.0001</td>
<td>&lt;.0001</td>
<td>&lt;.0001</td>
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</table>

*p < .05; **p < .01 (two-tailed tests)

Discussion

Even in this highly restricted range of individuals, with lower socioeconomic status and high levels of substance abuse, there was a strong and prospective association between perceived neighborhood characteristics and subsequent depressive symptoms, even after adjusting for baseline depressive symptoms. The data also suggest that neighborhood social disorganization is a powerful chronic stressor among inner-city populations. As this was a prospective study, the issue of confounding the measures of chronic stressors and depressive symptoms was attenuated. These results support the hypothesis that chronic or ambient stressors are associated with mental health (Pearlin 1989) and suggest that neighborhood level stressors such as social disorganization may be an important factor in explaining the social distribution of mental disorders. In addition to the potentially enormous impact on quality of life, depression may lead to cardiovascular disease, substance abuse, relapse into drug use, and HIV risk behaviors (Svanum and McAdoo 1989; Malow et al.1992; Hawkins et al. 1998; Penninx et al. 2001). All these factors may perpetuate poverty and may help to explain the association between social class and mortality.

One explanation for why neighborhood factors are highly stressful is their lack of controllability (Mirowsky and Ross 1990). Not only are residents often unable to control such stressors ranging as litter and crime, but they also do not have the economic resources to move out of these neighborhoods. Social isolation may be one method of controlling neighborhood disorganization, but it may in turn foster depression. Social integration as measured by church involvement was negatively associated with depressive symptoms. We do not know if church attendance is an index of emotional or material support or social capital. We also do not know if the relationship between church attendance and depressive symptoms is context specific. Historically, churches have played an important role in African American communities (Lincoln and Mimiya 1991).

Most of the participants felt that their neighborhoods had problems of crime, drugs, litter on the streets, and vandalism. Social support, as measured by support network size, did not appear to buffer or reduce the deleterious effects of living in neighborhoods with high levels of social disorder, as indicated by the lack of interaction among neighborhood perceptions and social support. It may be that the support networks of individuals residing in such disadvantaged communities are so impoverished that they cannot provide social support. Or perhaps the stresses of the neighborhoods are so pervasive that network support is unable to assist with reducing these stressors. Other studies of depression have found that negative social interactions often overshadow positive ones (Rook 1984). It is also possible that social support may function differently in these impoverished neighborhoods,
and that our measures did not capture this phenomenon. One explanation for why we did not find a difference in the relationship between the neighborhood perceptions scale at baseline and depression at follow-up for residentially "stable" versus "non-stable" participants is that "non-stable" participants move to similar areas within Baltimore, and are thus exposed to the same type of neighborhood problems at each residence.

This study is limited by the recruitment and sampling procedures of targeted snowball sampling. Few studies have prospectively examined the psychological impact of living in disadvantaged inner-city environments, and as this group has high levels of illegal and stigmatized behaviors, it would be exceedingly difficult to identify a sampling frame to conduct a random sample. Another limitation of this study concerns the use of only perceived neighborhood characteristics and not actual characteristics. In our multivariate model, we attempted to control for the potential bias of mood-congruent responses by including baseline CES-D score as a covariate. Perceived characteristics have been shown to be more related to depression than actual characteristics in other populations (Ross and Jang 2000; Hadley-Ives et al. 2000). However, in assessing the impact on mental health of actual neighborhood conditions versus perceived neighborhood conditions, one must consider what constitutes a neighborhood. The influence of neighborhood factors on behaviors may not coincide with geographic planning boundaries such as block groups, census tracts, or zip codes. An individual's self-defined neighborhood may span several block groups, or may be limited to the street on which the individual resides. This could account, in part, for the previously reported stronger relationship between perceived neighborhood characteristics and depression versus actual neighborhood characteristics and depressive symptoms. Future studies might attempt to assess longitudinally a range of actual and perceived neighborhood characteristics and their association with drug use and depressive symptoms using a design that measures neighborhood characteristics.

Although highly disadvantaged urban neighborhoods have numerous pressing issues to address, such as employment, HIV, and crime, depressive symptoms may exacerbate these conditions. Individuals may be self-medicating their depressive symptoms by using illicit substances, and individuals with high levels of depressive symptoms are more likely to relapse into substance abuse (Gruber, Chutuape, and Stitzer 2000). Residing in such neighborhoods may lead to a vicious cycle where stress and depression lead to drug use, and drug use fosters neighborhood disorder, leading to more stress and depression within the neighborhood. Depression is usually viewed as an individual level variable. Our findings suggest that a neighborhood level analysis of depression may be important. It may be possible to identify neighborhoods, rather than individuals, that are at risk for depression.

In these disadvantaged neighborhoods, social disorganization may also impede the establishment and maintenance of social relations that buffer against depression. Lack of social control within the neighborhood may also lead to hopelessness, which also may diminish the chances of social action within the community to rectify these conditions. The data also suggest that individual social resources have only minimal impact on reducing depression in this highly impoverished setting. Regaining social control through community organizations may be effective, but without resources to provide training and employment opportunities outside of the drug economy, to reduce the physical decay and destruction, and to provide adequate housing and social services (Wilson 1987), it is doubtful that such disadvantaged neighborhoods on their own can maintain social control and reduce social disorganization.

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