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Neighborhood Context, Personality, and Stressful Life Events as Predictors of Depression Among African American Women

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Abstract

The authors tested neighborhood context, negative life events, and negative affectivity as predictors of the onset of major depression among 720 African American women. Neighborhood-level economic disadvantage (e.g., percentage of residents below the poverty line) and social disorder (e.g., delinquency, drug use) predicted the onset of major depression when controlling for individual-level demographic characteristics. Neighborhood-level disadvantage/disorder interacted with negative life events, such that women who experienced recent negative life events and lived in high disadvantage/disorder neighborhoods were more likely to become depressed than were those who lived in more benign settings, both concurrently and over a 2-year period. Neighborhood disadvantage/disorder can be viewed as a vulnerability factor that increases susceptibility to depression following the experience of negative life events.

The neighborhood contexts in which people live affect many aspects of their lives, including their daily stress level, personal safety, and available resources. Contextual effects have been hypothesized for development in general and for mental health in particular (Bronfenbrenner, 1979a,1979b,1986;Jessor, 1992,1993). The MacArthur Foundation issued a set of recommendations calling for systematic consideration of the role of context in the etiology of psychopathology (Boyce, Frank, Jensen, Kessler, Nelson, & Steinberg, 1998). However, to date, neighborhood contexts have received relatively little attention as a factor in mental health. Considerably more work has been done on the effects of neighborhood context on delinquency, crime, physical health, and parenting practices (e.g., Anderson, Sorlie, Backlund, Johnson, & Kaplan, 1997;Brody et al., 2003;Jencks & Mayer, 1990;Jessor, 1992;Jones & Duncan, 1995;LeClere, Rogers, & Peters, 1997;Robert, 1998;Sampson, 1992;Sampson, Raudenbush, & Earls, 1997). A key question is the extent to which community context affects people's

mental health beyond the effects of individual-level demographic characteristics, personality, and stressors.

In the current study, we tested the extent to which neighborhood context was associated with diagnosable depression in a large sample of African American women, both directly and through interaction with personal risk variables. The personal risk variables we examined were negative life events and the personality trait of negative affectivity. We reasoned that an adverse neighborhood environment would amplify the effects of these known risk factors for depression. In other words, we predicted that women with these individual-level risk factors who reside in impoverished and/or dangerous neighborhoods would be more likely to experience episodes of major depression than would those who reside in more affluent, safe neighborhoods.

Neighborhood Context

African Americans are disproportionately exposed to social and economic conditions that are considered risk factors for psychiatric disorder, although their rates of diagnosable disorder are no higher than those of other ethnic groups (Kessler et al., 1994;Mirowsky & Ross, 1980;Robins & Reiger, 1991;Williams & Collins, 1995). Two dimensions of neighborhood context have particular relevance to the well-being of African American women: neighborhood economic disadvantage and neighborhood social disorder (Massey & Shibuya, 1995;Wilson, 1996;Woody, 1992). Neighborhood economic disadvantage is indexed by such variables as percentage of residents below the poverty line, unemployment rates, and percentage of single-parent households. Poor neighborhoods provide few opportunities for employment and are characterized by low-quality schools, low-quality housing, few recreational activities, and refused services, such as credit applications, taxi service, and food delivery (Sooman & Macintyre, 1995;Troutt, 1993). In such settings, residents experience frustration in their efforts to provide a high-quality life for themselves and their families. In neighborhoods of concentrated poverty, few role models exist of individuals who have succeeded in escaping poverty. Thus, hopelessness may result, producing vulnerability to depression (Wilson, 1996). Finally, lower levels of social support may exist in economically disadvantaged neighborhoods (Klebanov, Brooks-Gunn, & Duncan, 1994). For example, in the wake of Hurricane Andrew, residents of low-income neighborhoods provided less assistance to one another than did those of higher-income neighborhoods, when controlling for the effects of individual-level household income (Haines, Hurlbert, & Beggs, 1996).

Social disorder refers to the breakdown of processes and structures that maintain order, civility, and safety. Signs of social disorder include unsupervised and delinquent youth, public intoxication, drug use and sales, and poorly maintained and vacant buildings. Even if residents are not directly victimized, signs of social disorder signal the potential for harm (LaGrange, Ferraro, & Supancic, 1992;Lewis & Salem, 1986). Furthermore, unchecked illegal activity and poorly maintained property signal that those in power do not care about the neighborhood or its residents, which leads to feelings of alienation and abandonment by mainstream society (Taylor & Hale, 1986). The stress of negotiating daily life in a threatening environment, with the knowledge that basic protections are lacking and neighbors cannot be trusted, may trigger feelings of helplessness and depression (Aneshensel & Sucoff, 1996;Ross, 2000).

We were not able to locate any published studies that examined the contribution of neighborhood-level characteristics to diagnosable depression when controlling for individual-level risk factors. However, a small number of studies have examined relations between neighborhood-level economic disadvantage and depressive symptoms while controlling for individual-level demographic characteristics (e.g., socioeconomic status (SES), age, race, marital status). A small number of studies have also examined relations between neighborhood-

level social disorder and depressive symptoms. Neighborhood-level economic disadvantage was significantly associated with depressive symptoms in a representative community sample of Illinois residents (Ross, 2000) but failed to predict depressive symptoms among mothers of low birth weight infants (Klebanov, Brooks-Gunn, & Duncan, 1994). Similarly, neighborhood-level economic disadvantage failed to significantly predict scores on a measure of distress (depressive and anxiety symptoms) in a previous analysis of the current data (Cutrona, Russell, Hessling, Brown, & Murry 2000). Turning to the relation between neighborhood-level social disorder and depressive symptoms, neighborhood-level social disorder was significantly associated with depressive symptoms in Ross's (2000) study of Illinois residents and with distress in a previous analysis of the current data set (Cutrona et al., 2000). In addition, Aneshensel and Sucoff (1996) found a significant relation between neighborhood-level social disorder (termed *ambient hazards*) and depressive symptoms in a large sample of adolescents. In a fourth study, a significant link was found between ratings of neighborhood safety and depression among mothers of young children (Hill & Herman-Stahl, 2002); however, neighborhood safety was analyzed at the individual rather than the neighborhood level.

Thus, there is evidence for a link between neighborhood-level characteristics and depressive symptoms, although the effects are generally small and the association with neighborhood social disorder is more consistent than is the association with neighborhood economic disadvantage. No published study to date has examined the prevalence of diagnosable psychiatric disorder as a function of neighborhood characteristics while controlling for individual-level risk factors.

Interactions Between Neighborhood and Individual Risk Factors

Neighborhood Context and Negative Life Events

The role of context in determining the impact of negative life events on adjustment has been documented in the work of George Brown and his colleagues (e.g., Brown, Bifulco, & Harris, 1987;Brown & Harris, 1978;Brown & Prudo, 1981). Brown and Harris's (1978) model of depression includes *vulnerability factors*, which are defined as factors that increase the risk of depression onset following a negative life event. These vulnerability factors reduce people's ongoing ability to feel mastery and optimism regarding their future. Thus, when a negative life event occurs, cognitions of hopelessness are amplified and depression ensues (Brown & Harris, 1978). An example of a vulnerability factor is the absence of a supportive spouse or romantic partner (Brown & Harris, 1978). In the current investigation, we tested the prediction that neighborhood context would serve as a vulnerability factor. More specifically, we predicted that women who live in a neighborhood high on economic disadvantage and/or social disorder would be more likely to experience the onset of a depressive episode following severe life events than women who live in a more benign neighborhood. We reasoned that a life context characterized by scarce opportunities and threats to personal safety would amplify cognitions of helplessness and hopelessness following the occurrence of major negative life events, thus triggering the onset of major depression.

Neighborhood Context and Personality

Social psychologists have long advocated examination of interactions between traits and situations (e.g., Lewin, 1936). We hypothesized that individuals high on negative affectivity would be more susceptible to major depression in the context of neighborhoods high on economic disadvantage and/or social disorder than they would be in more benign settings. Negative affectivity reflects sensitivity to negative stimuli. Individuals high on negative affectivity tend to feel inadequate, to be generally dissatisfied, and to hold negative views of themselves, others, the world, and life in general (Clark, Watson, & Mineka, 1994). We reasoned that the lack of opportunities and resources found in economically disadvantaged

neighborhoods and the potential for victimization in high social disorder neighborhoods would heighten cognitions of helplessness among persons high on negative affectivity. Consistent with this view, in a previous analysis of the data used for the current study, African American women who were both high on negative affectivity and lived in neighborhoods high on social disorder reported disproportionately high levels of distress (Cutrona et al., 2000). The current investigation examines whether the same trait–situation interaction exists when predicting the onset of diagnosable depression.

We were able to locate only one previous study that examined interactions between personality and community characteristics in the prediction of adjustment. Adolescents who scored high on impulsivity were more likely to commit delinquent acts if they lived in neighborhoods high in concentrated poverty than if they lived in more affluent neighborhoods (Lynam et al., 2000). No previous study has examined interactions between individual-level traits and neighborhood-level characteristics in the prediction of diagnosable psychiatric disorder.

Specific Predictions

We predicted that women who reside in neighborhoods high on economic disadvantage and/ or social disorder would have higher rates of major depression than would women who reside in neighborhoods low on economic disadvantage and social disorder, both cross-sectionally and over time. We further predicted that neighborhood economic disadvantage and social disorder would serve as vulnerability factors and would heighten the probability of the onset of major depression following negative life events. We also predicted that the combination of negative affectivity and adverse neighborhood characteristics would heighten vulnerability to depression, such that the rate of major depression would be higher among women high on negative affectivity if they resided in neighborhoods high on economic disadvantage and/or social disorder than it would be if they resided in neighborhoods low on economic disadvantage and/or social disorder.

Method

Sampling Strategy

Participants were drawn from a larger sample of 897 individuals who were participants in the Family and Community Health Study, a large-scale study of African American families who reside outside of large, metropolitan, inner cities (see Cutrona et al., 2000). This sample is unique in many respects. Most studies of African American families have focused narrowly on inner-city dwellers. We recruited families from a range of settings, including rural areas, small towns, and midsized cities. Most prior studies have concentrated on impoverished families. Our sample spans a wide range of family incomes, including middle class African American families, who have received very little research attention.

To be eligible for the larger study, adults had to be the primary caregiver for a 10- to 12-year-old African American child. We used 1990 census data to select our sample. Block group areas (BGAs) were identified in two rural states (Iowa and Georgia) in which the percentage of African American families was high enough to make recruitment economically practical (10% or higher) and in which the percentage of families with children living below the poverty line varied widely. A BGA is a cluster of blocks within a census tract. A typical census tract contains four or five BGAs. The U. S. Census Bureau strives to use naturally occurring neighborhood boundaries when constructing BGAs. For the 1990 census, BGAs averaged 452 housing units or 1,100 people. In Georgia, we identified BGAs in the northeast part of the state that excluded inner-city Atlanta and met the criteria for racial composition and extent of poverty. Because of our interest in the experiences of African American women outside of major metropolitan areas, we drew from small towns and rural areas in 12 counties. All but two of the counties

had populations of 30,000 or less. To sample affluent African American neighborhoods, we also drew some of our participants from Athens and suburbs of Atlanta. In Iowa, we identified BGAs that met the criteria for percentage of African American residents, all of which were in two small to midsized cities, one with a population of 65,000 and the other with a population of 193,000. As reported previously (Cutrona et al., 2000), comparisons with census data suggest that our sampling strategy yielded a fairly representative set of neighborhoods, although upper income BGAs in Georgia were slightly underrepresented.

Once BGAs were identified, we constructed rosters of eligible families from information provided by public and private schools and other community organizations, including churches, youth organizations, and community centers. Across sites, 25% of families contacted were ineligible because of child age or race. Among those whom we believed to be eligible, we were unable to locate 19%. Among those whom we invited to participate, 24% refused and 5% were lost to follow-up before the interview was completed. We thus completed interviews with 71% of the eligible families we were able to contact. Low income and minority populations are somewhat more difficult to recruit and retain in research samples than are higher income and majority populations (Krohn & Thornberry, 1999;Vernon, Roberts, & Lee, 1984). Our recruitment rate was similar to that achieved in the National Survey of Black Americans (Jackson, 1991), which recruited a national probability sample of African American adults.

Participants

For the current study, we selected women from the larger group who self-identified as African American ($n = 759$). This pool was diminished further by missing data ($n = 720$). We conducted a series of t tests or chi-square analyses on all study variables to determine whether women with incomplete data differed from those with complete data. None of the differences were statistically significant, suggesting that the loss of participants with missing data did not bias the sample.

Participants were interviewed twice, first in 1997 and again in 1999. The overall retention rate over the 2-year time period was 88%. The sample size for African American women with complete data at both time points was 631. We conducted a series of t tests or chi-square analyses on all study variables to determine whether women who participated in both waves of data collection differed from those who did not. One significant difference was found. Women who were lost to follow-up lived in neighborhoods with higher mean social-disorder ratings than did women who completed both assessments, $t(718) = 2.81$, $p = .005$. Thus, the final sample is biased toward underrepresentation of women whose neighborhoods were rated higher on social disorder. Loss of women in neighborhoods high on social disorder truncates the range of values on the social disorder variable, making it less likely that significant associations would be found between neighborhood-level social disorder and other variables (Stoolmiller, 1999).

The mean age of participants at the first assessment was 37.0 years ($SD = 8.36$); age ranged from 24 to 80 years. Thirty-five percent of the women were currently married. The mean number of children aged 18 or under residing in women's homes was 2.63 ($SD = 1.33$) and ranged from one to eight. Regarding education, 20% had less than a high school education, 43% were high school graduates, 28% had some college or technical training, 6% had a bachelor's degree, and 2% had an advanced graduate degree. Seventy-one percent reported full- or part-time employment, 15% were unemployed or laid off from work, 4% were permanently disabled, and 8% were full-time students, homemakers, or retirees. Although income information was requested, only 540 respondents (75%) provided this information. Among those who responded to the income questions, mean yearly personal earnings did not differ significantly by state and averaged $17,600 ($SD = $12,783$). This figure was almost identical to the 1990 U. S. Census income data (adjusted for inflation) for African American

women of comparable ages with those in our sample in Iowa and Georgia ($17,637). Thus, our sample appears to be representative of African American women in both states with regard to personal yearly income.

Procedure

All interviewers were African American. Most resided in or near the communities where the study was conducted. Interviews were conducted in participants' homes or, if the family preferred, in a convenient location near their home (e.g., library, school, church). Respondents were reimbursed $100 for participating in each wave of the study. We administered a wide range of questionnaires, a subset of which are the focus of this study. Interviews were administered through the use of computer assisted personal interviewing (CAPI). Interview questions were preprogrammed into laptop computers and responses were immediately entered into the computer by the interviewer. An advantage of computer-assisted personal interviewing is that out-of-range values are rejected at the time of entry. Interviewers are required to enter a valid response before they are presented with the next question on the computer screen.

As reported elsewhere (Cutrona et al., 2000), the families in our sample were nested within 259 block group areas (BGAs). Experts in hierarchical linear modeling typically recommend a minimum of 15 participants per group for multilevel data analysis (Bryk & Raudenbush, 1992). This minimum was not achieved within many of our BGAs. As described in a previous publication based on this data set (Cutrona et al., 2000), we addressed this problem by using cluster analysis to combine geographically proximal BGAs with similar socioeconomic characteristics into larger community units. First, we divided our recruitment areas in Iowa and Georgia into smaller segments. For example, the city of Des Moines was divided into four sectors. We conducted cluster analyses within each sector to form groups of socioeconomically similar neighborhoods. We used five census variables to perform the cluster analysis: average per capita income, proportion of households that were female-headed, proportion of persons on public assistance, proportion of households below the poverty level, and proportion of unemployed men. Previous studies have used some combination of these variables to assess community socioeconomic status (SES; Sampson et al., 1997; Sucoff & Upchurch, 1998) and factor analysis indicated that these variables loaded on a single factor for the BGAs in our sample. The cluster analysis was performed with Ward's minimum-variance method, which is available within the SAS cluster program (SAS Institute, 1990). This method tends to join clusters with a small number of observations and is strongly biased toward producing clusters with roughly the same number of observations. Our analysis identified 21 clusters in Iowa and 20 in Georgia, for a total of 41 clusters. Most clusters ($n = 31$) contained between 15 and 30 families. Each cluster consisted of a collection of BGAs or neighborhoods of comparable SES that shared a similar location within a particular city, town, or rural area. The same 41 clusters were used by Cutrona and colleagues in a previous publication based on the current data set (Cutrona et al., 2000).

Measures

Neighborhood-Level Variables

Census-based An index of neighborhood-level economic disadvantage was computed for each cluster, on the basis of 1990 census data. The same five variables that were used in the cluster analysis to combine BGAs were used to compute this index. The mean for each of the BGAs within each cluster was computed for each of the five economic variables. The standardized means were then averaged to create an aggregate economic disadvantage score for each cluster. Evidence of the neighborhood-level economic disadvantage variable's validity comes from significant correlations with relevant variables assessed in our study. To conduct these analyses, we computed the mean of relevant variables for our participants within each of the 41 clusters. The census-based neighborhood-level economic disadvantage variable correlated

significantly with the mean income, $r(39) = -.60$ $p < .001$, and education level, $r(39) = -.65$, $p < .001$, of our study participants. Thus, the SES of our participants corresponded relatively closely to the index of neighborhood-level economic disadvantage.

Questionnaire-based An additional index of neighborhood quality—neighborhood-level social disorder—was based on respondents' answers to questions about their neighborhood. Neighborhood-level social disorder combined items from two scales developed for this project: Community Dilapidation and Community Deviance. The 5-item Community Dilapidation scale asks the extent to which each of the following presents a problem in the respondent's neighborhood: trash or broken glass on the streets, graffiti on buildings and walls, and vacant or deserted buildings. Two additional items inquire whether children have nowhere to play but the street and whether the equipment and buildings in the closest park or playground are well kept. The 4-item Community Deviance scale asks the extent to which each of the following is a problem in the respondent's neighborhood: drinking in public, people selling or using drugs, groups of people hanging out and causing trouble, and gang violence. These items were answered on a 3-point scale that ranged from 1 (*not at all a problem*) to 3 (*a big problem*). We standardized the scores on each item and averaged them to form a total social disorder scale for each neighborhood cluster. Coefficient alpha for the 9-item scale was .89.

Neighborhood-level social disorder was aggregated at the level of neighborhood clusters in all analyses. The mean for neighborhood-level social disorder was computed across all respondents within each cluster. We used this aggregate-level value in all analyses rather than participants' individual assessments of their neighborhood. To assess the extent to which neighborhood residents agreed in their neighborhood ratings, we used O'Brien's (1990) method for computing the reliability of aggregate-level variables formed from individual-level ratings. With this method, interrater reliability was .79, which suggests a relatively high degree of consensus among raters. We used the same measures of neighborhood-level economic disadvantage and social disorder that were used in a previous publication that was based on the current data set (Cutrona et al., 2000).

Individual-Level Variables

Demographic characteristics Demographic variables included participant state of residence (Iowa vs. Georgia), age, education, marital status, number of children in the home, and whether anyone in the home currently received government assistance. Although it would have been desirable to include income as a demographic variable, as noted previously, a large number of participants refused to answer some or all of the income questions. Rather than imputing missing values, we relied on education and receipt of government assistance as indices of SES. In the current sample, both education, $r(538) = .43$, $p < .001$, and receipt of government assistance, $r(538) = -.45$, $p < .001$, correlated significantly with income among those who answered the income questions.

Psychiatric diagnosis Participants were administered a structured psychiatric diagnostic interview, the University of Michigan Composite International Diagnostic Instrument (UM–CIDI; Kessler, 1991). The UM–CIDI was designed for administration by lay interviewers in large scale community studies and is a modification of the National Institute of Mental Health Diagnostic Interview Schedule (DIS; Robins, Helzer, Croughan, Williams, & Spitzer, 1981). The UM–CIDI was developed for the National Institute of Mental Health National Comorbidity Study and subsequently modified to yield *DSM–IV* (*Diagnostic and Statistical Manual of Mental Disorders,* 4th ed.; American Psychiatric Association, 1994) diagnoses. A variety of studies point to the validity of the diagnostic classifications rendered by the CIDI (Kessler et al., 1994,1998;Wittchen, Kessler, Zhao & Abelson, 1995;Wittchen, Zhao, Abelson, Abelson, & Kessler, 1996).

Interviewer selection and training is critical for valid results from diagnostic interviews. In an intensive 1-week training program, interviewers were required to reach specified criteria in asking questions, probing, clarifying, and recording all responses. Techniques to train interviewers included didactic presentations, videotaped demonstration interviews, role-playing, practice interviews, and group discussions. As noted above, the entire interview, including the diagnostic interview, was administered via computer-assisted personal interviewing (CAPI). All questions were preprogrammed into a laptop computer. The diagnostic interview is quite complex in that if a respondent does not meet a key criterion for a specific disorder (e.g., the mood/loss of interest criterion for major depression), the rest of the questions regarding symptoms of that disorder are skipped. Because the skip patterns are preprogrammed contingent on the respondent's answers, interviewer error in decisions concerning which questions to administer is eliminated.

Negative life events We assessed the number of acute negative life events in the previous 12 months with a 29-item checklist of relatively severe negative life events. It is known that the behaviors of depressive persons, especially their interpersonal behaviors, can increase the probability that they will experience negative life events (Hammen, 1991;Hammen, Mayol, deMayo, & Marks, 1986). We were concerned that number of negative life events might, in part, be a reflection of severity of depression. To minimize the nonindependence of depression severity and number of negative life events experienced, we selected a subset of items for our analyses that were judged to be independent of the individual's own actions and/or psychopathology. We sent the full list of life events to Constance Hammen, who has published extensively in the area of stress generation among depressed patients (e.g., Hammen, 1991;Hammen et al., 1986). She and her research group divided the list into three categories: independent, ambiguous, and not independent. We included in our analyses only the 14 events that Hammen and her colleagues rated as independent of the individual's actions (e.g., criminal victimization, natural disaster victimization, serious illness or injury of family member). A list of the events we used in the analyses and the number of women who experienced each event is provided in Table 1.

Personality We administered Clark and Watson's Brief Temperament Survey (Clark & Watson, 1995), which consists of three scales: Negative Temperament, Positive Temperament, and Disinhibition. The Brief Temperament Survey is a short form of the General Temperament Survey (Clark, 1990;Watson & Clark, 1992). We used the Negative Temperament scale as our index of negative affectivity. Coefficient alpha was .85 for this 14-item scale. The scale's validity in the current sample is evidenced by correlations with anhedonia (inability to feel pleasure), $r(716) = .42$, $p < .001$, and anxiety, $r(716) = .34$, $p < .001$ (Cutrona et al., 2000).

Data Analyses

Each participant was nested within a neighborhood or cluster. One problem this creates for standard data analysis procedures, such as logistic regression, is that the sample violates the assumption that each participant is independent of all other participants. That is, to the extent that persons within neighborhood clusters resemble one another and differ from persons in other clusters, the sample cannot be viewed as representing a simple random sample drawn from the population. Such nonindependence of members of the sample tends to reduce the error terms that are used in testing the significance of predictor variables, which in turn leads to a positive bias in the tests of significance that are conducted for the individual-level variables (see discussions by Kreft & de Leeuw, 1998;Snijders & Bosker, 1999). Therefore, it is necessary to correct the tests of significance involving the individual-level variables for the bias created by this lack of independence. To address issues raised by nonindependence, the data were analyzed by using a multilevel approach, as operationalized by the Proc Mixed procedure provided by the SAS statistical package (Littell, Milliken, Stroup, & Wolfinger,

1996). In addition to permitting the simultaneous examination of both individual-level and neighborhood-level predictors of the dependent variable, this procedure also corrects for nonindependence of the observations in testing the effects of the individual-level variables on the dependent variable. As noted by Singer (1998), results derived from the Proc Mixed procedure are very similar to those derived from the Hierarchical Linear Modeling program developed by Bryk, Raudenbush, and Congdon (1996).

Data analysis was complicated further by the dichotomous nature of the outcome variables of depression (present vs. absent). The analytic strategy of choice for predicting dichotomous outcomes with strongly skewed distributions is logistic regression. We used the Proc Mixed procedure along with the GLIMMIX macro (Littell et al., 1996) to conduct a log transformation of the dichotomous dependent variables (see discussion by Littell et al., 1996). These analyses can thus be viewed as representing multilevel logistic regressions.

When estimating the influence of neighborhood characteristics on the onset of major depression, it is important to ascertain that the depressive episode did not precede moving to the neighborhood. This is particularly important because depression may lead to loss of employment and other financial problems that would necessitate moving to a less expensive, poorer quality neighborhood (Wells et al., 1989). In the first wave of data, we included two questions that asked whether the respondent had moved in the past 12 months because of financial problems or to save money. Unfortunately, these were the only indices of length of residence included in the Wave 1 interview. In the first set of analyses predicting the onset of depression, we included only women who responded *no* to both questions ($n = 645$ with complete data). We limited our definition of *case status* to women who reported the onset of depression within the previous 6 months to ensure that they had lived in their current neighborhood at least 6 months before onset. In the second wave of data, we asked respondents if they had moved (for any reason) since the first interview, which was 2 years earlier. In our prospective analyses, we included only women who had not moved in the past 2 years ($n = 385$ with complete data). We limited our definition of case status to women who were not depressed at Wave 1 and who reported the onset of depression within the previous 12 months. In this way we ensured that women had lived in their current neighborhood at least 12 months before onset and that their current depression was not simply a continuation of depression assessed at Wave 1.

Results

Prevalence of Target Disorders

We computed the percent of participants who met *DSM–IV* criteria for major depressive disorder. The UM–CIDI yields lifetime, 12-month, 6-month, and current diagnoses. In addition, it is possible to date the onset of the most recent episode. Prevalence and incidence rates for major depression in the total study sample and the two nonmover subsamples are shown in Table 2. We conducted chi-square analyses to determine whether rates of depression differed significantly for movers versus nonmovers. When comparing those who moved for financial reasons in the 12 months prior to the first interview to those who did not, we found a single significant difference. Significantly more women who moved for financial reasons in the previous 6 months reported the onset of depression than those who did not move in the previous 6 months, $\chi^2(1, N = 720) = 7.68$, $p < .01$. The exclusion of women who had moved for financial reasons from the analyses lowered the number of cases to be predicted, thus making it more difficult to attain significant results and making the analysis more conservative. When comparing women who had moved between the first and second interviews with those who had not moved, we found no significant differences on any of the depression variables.

The lifetime prevalence for major depression in the overall sample was 13.8%. We compared the lifetime prevalence rate obtained in our sample with that reported for African American women aged 25 and older in the National Comorbidity Study (Kessler et al., 1994). For women over the age of 45, we found no significant differences between the two samples. For women between the ages of 25 and 45, our participants showed a significantly lower rate of major depression (14.5% vs. 18.6%; $\chi^2(1, N = 653) = 6.56, p < .01$). One reason for the lower rate of major depression may be the high percentage of rural residents in our sample (Blazer et al., 1985). In addition, all of our participants were the primary caregiver for a child. This selection criterion may have excluded women whose depression was severe enough to preclude caring for a child. Finally, the demands of participation may have been overwhelming to severely depressed women, causing them disproportionately to decline to participate.

We conducted two sets of analyses, one cross-sectional and one prospective. As noted above, for both sets of analyses, we selected women who had resided in their current neighborhood for at least 1 year. For both the cross-sectional and prospective analyses, we checked for interactions between predictor variables and moving status (0 = *did not move*; 1 = *moved*). None of the interactions attained statistical significance. Thus, it does not appear that the relationship between the predictors and depression onset were significantly different for women who had recently moved versus those who had not.

Correlations Among Variables

Correlations among the individual-level variables at Time 1 are shown in Table 3. All predictors were assessed at Wave 1. In the table, major depression (Wave 1) refers to the onset of major depression within the prior 6 months, assessed at Wave 1. Major depression (Wave 2) refers to the onset of a new case of major depression in the past 12 months at Wave 2 and was only counted for women who did not report depression at Wave 1. Zero-order correlations were generally consistent with predictions. In the concurrent analyses, both negative affectivity and negative life events correlated significantly with the onset of major depression. Prospectively, negative affectivity but not negative life events correlated significantly with the onset of a new case of depression at Wave 2. Receipt of government assistance was significantly correlated with the onset of depression both concurrently and prospectively.

Correlations were also computed between neighborhood-level variables and variables that were assessed at the individual level. To conduct these analyses, we computed the mean for each individual-level variable within each neighborhood cluster. The two neighborhood-level variables (economic disadvantage and social disorder) were themselves highly correlated, $r(39) =.66, p < .001$. Therefore, for all analyses we combined social disorder and economic disadvantage into a single index of neighborhood disadvantage/disorder. To form this index, we averaged the mean standardized scores on the two neighborhood-level measures. As shown in Table 4, education level and being married were negatively correlated with neighborhood-level social disadvantage/disorder. Receipt of government assistance by a household member was positively correlated with neighborhood-level social disadvantage/disorder. Neighborhood-level social disadvantage/disorder was correlated with the onset of major depression at Wave 1 but not at Wave 2. No other correlations attained statistical significance. It is important to note that the unit of analysis in these correlations was the neighborhood cluster rather than the individual participant. Thus, with an *N* of only 41, power to detect significant relations among variables was limited.

Predicting Major Depression

Concurrent Analyses—We used multilevel logistic regression to test the prediction that neighborhood-level disadvantage/disorder was significantly associated with the onset of depression when controlling for individual-level demographic characteristics and risk factors.

We then added the interaction between neighborhood disadvantage/ disorder and negative life events to the logistic regression equation to test our hypothesis that neighborhood disadvantage/ disorder would serve as a vulnerability factor and heighten the probability of depression following negative life events. Our final analysis examined whether the interaction between neighborhood disadvantage/disorder and negative affectivity attained significance, as is predicted by trait–situation interaction theory.

To test whether the individual- and community-level variables predicted the onset of depression, we conducted a hierarchical multilevel logistic regression (see Table 5). In Step 1, we entered the demographic variables of education, age, state of residence, government assistance receipt, marital status, and number of children in the home. Only receipt of government assistance by a member of the household attained significance. Women who lived in a home in which someone received government assistance were more likely to have experienced the onset of depression than those living in a home without a recipient of government assistance. In the next step, we entered neighborhood-level disadvantage/disorder. As predicted, living in a neighborhood high on economic disadvantage/disorder increased risk for the onset of depression, even when controlling for individual-level demographic variables. In the next step, we entered number of negative life events and negative affectivity, both of which were significant predictors of the onset of depression. It should be noted that neighborhood-level disadvantage/disorder became marginally significant when these two individual-level risk factors were entered into the equation. The set of nine predictor variables significantly predicted the onset of depression, $\chi^2(9) = 32.65$, $p < .001$.[1]

Our primary predictions concerned interactions between individual-level and community-level variables. Kreft and de Leeuw (1998) have recommended examining each interaction term in isolation in multilevel models to minimize the negative effects of multicollinearity on the stability of findings. Therefore, we tested our predictions regarding interactions by first entering all of the variables included in the logistic regression shown in Table 5, and then testing the significance of each of the predicted interactions one at a time.[2] The interaction terms were formed by multiplying each standardized individual-level score by the standardized aggregate neighborhood-level score. We tested for interactions between neighborhood disadvantage/disorder and two individual-level variables: number of negative life events and negative affectivity. The interaction between number of recent negative life events and neighborhood disadvantage/disorder was not significant, $b = .27$, $t(596) = 1.88$, $p = .06$, but the effect size was moderate. Because this analysis tested a clear a priori prediction, we investigated the pattern of the interaction. When neighborhood-level disadvantage/disorder was one standard deviation above the sample mean, the association between negative life events and depression onset was stronger, $b = .86$, $\chi^2(596) = 4.37$, $p < .001$, than when neighborhood-level disadvantage/disorder was one standard deviation below the sample mean, $b = .19$, $\chi^2(596) = .57$, $p = .57$. In Figure 1, we plotted the slopes of the lines relating number of negative life events to the onset of major depression with neighborhood disadvantage/disorder one standard deviation above the sample mean and with neighborhood disadvantage/disorder one standard deviation below the sample mean. As shown in Figure 1, women who reported a high number of negative life events and lived in a neighborhood high on disadvantage/disorder had a disproportionately high rate of onset of major depression.

Contrary to prediction, negative affectivity did not interact significantly with neighborhood disadvantage/disorder, $b = -.18$, $t(596) = -.77$, $p = .45$.[3]

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[1]We conducted an additional multilevel logistic regression analysis predicting the onset of major depression by using the same predictor and outcome variables that are shown in Table 5, but we analyzed neighborhood-level economic disadvantage and social disorder as two separate variables. Results were the same. We repeated this procedure for the prospective analysis and also found the same results.
[2]We also conducted the analysis with both interaction terms in the equation at the same time. Results were the same.

Prospective Analyses—We repeated the analyses reported above, this time predicting the onset of a new episode of major depression at Wave 2 within the past 12 months, among women who had not moved in the previous 24 months. We took all predictors from the Wave 1 assessment. To test whether the Wave 1 individual- and community-level variables predicted the onset of a new episode of depression at Wave 2, we conducted a hierarchical multilevel logistic regression (see Table 6). In Step 1, we entered the demographic variables of education, age, state of residence, government assistance receipt, marital status, and number of children in the home. Age was negatively related and receipt of government assistance was positively related to depression onset. In the next step, we entered neighborhood-level disadvantage/disorder. Contrary to prediction, neighborhood-level disadvantage/disorder at Time 1 did not significantly predict the onset of depression at Time 2. In Step 3, we entered number of negative life events and negative affectivity. Only negative affectivity significantly predicted the onset of depression at Time 2. The set of nine predictor variables significantly predicted the onset of depression, $\chi^2(9) = 62.11$, $p < .001$.

To test for the predicted interactions between neighborhood-level disadvantage/disorder and the two individual-level risk variables (number of negative life events and negative affectivity), we followed the same procedure as that described above for the concurrent analyses. The interaction between neighborhood-level disadvantage/disorder and number of negative life events was highly significant, $b = 1.18$, $t(336) = 3.93$, $p = .0001$. As is shown in Figure 2, when neighborhood-level disadvantage/disorder was one standard deviation above the sample mean, the association between negative life events and depression onset was positive, $b = 1.03$, $\chi^2(336) = 2.42$, $p = .02$. When neighborhood-level disadvantage/disorder was one standard deviation below the sample mean, the association between negative life events and depression onset was negative, $b = -75$, $\chi^2(33) = -1.99$, $p = .05$. The negative relation between life events and depression in neighborhoods low on disadvantage/disorder was unexpected. Contrary to prediction, the interaction between neighborhood-level disadvantage/disorder and negative affectivity did not attain significance, $b = .19$, $t(336) = .72$, $p = .47$.[4]

Discussion

The contexts in which people live their daily lives influence their emotions, beliefs, and behavior (Bronfenbrenner, 1979b). The proximal interpersonal contexts provided by family, friends, and other members of people's social networks are known to influence the probability, severity, and duration of depression (see edited volume by Joiner & Coyne, 1999). We hypothesized that the more distal context of neighborhood characteristics would also show a significant association with depression when controlling for family demographic characteristics and other key risk factors. As predicted, at Time 1 we found that when

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[3]We conducted analyses to examine the impact of individual participants' perceptions of neighborhood social disorder on the onset of major depression. In the cross-sectional analysis, individual participants' ratings of neighborhood social disorder were not significantly related to onset, net of the other individual-level predictor variables and the aggregate-level community variables, $b = .18$, $t(595) = .67$, $p = .50$. The strength of the relation between neighborhood-level disorder/disadvantage remained the same, $b = .59$, $t(38) = 1.70$, $p = .09$, after controlling for individual-level ratings of community social disorder. This relation approached significance even when participants' personal perceptions of their neighborhood were statistically controlled. Similarly, in the prospective analysis, individual participants' ratings of neighborhood social disorder were not significantly related to onset, net of the other individual-level predictor variables and the aggregate-level community variables, $b = .08$, $t(335) = .30$, $p = .76$. Neighborhood-level disorder/disadvantage was not a significant predictor of depression onset with the individual-level neighborhood rating in the equation.

[4]At the suggestion of an anonymous reviewer, we examined whether the interactions between neighborhood characteristics and negative life events in the prediction of depression simply reflect different kinds of stressors occurring in different kinds of neighborhoods. We found that a single event, an extramarital affair by one's partner, occurred significantly more frequently in neighborhoods high on neighborhood economic disadvantage/disorder. When we deleted this event from the life events scale and repeated the analyses, results remained the same, both concurrently and prospectively.

The significant interactions could not be accounted for by the use of the control variables. When control variables were removed from both concurrent and prospective analyses, interactions between neighborhood economic disadvantage/disorder remained significant (ps < .05).

controlling for individual demographic characteristics, rates of recent onset of major depression were significantly higher among women who lived in neighborhoods characterized by widespread poverty and social disorder than they were among women who lived in better quality neighborhoods. This is consistent with previous research on neighborhood context and symptom measures of distress (Aneshensel & Sucoff, 1996;Ross, 2000), although Klebanov et al. (1994) failed to find a significant relation between neighborhood economic disadvantage and distress among mothers of young children. It is also consistent with previous analyses of the current data set, in which scores on a continuous measure of distress were predicted by neighborhood characteristics (Cutrona et al., 2000).

Although concurrent analyses showed a significant relation between neighborhood-level disadvantage/disorder and the onset of depression, this association was not significant over the 2-year period from Wave 1 to Wave 2. It is possible that the neighborhood changed over the 2-year interval from Wave 1 to Wave 2. If the neighborhood changed significantly, either improving or deteriorating, its Wave 1 characteristics would not be expected to affect mental health at Wave 2. The pattern of results is consistent with a diminishing effect over time of the Wave 1 neighborhood characteristics, although the interaction between neighborhood characteristics and negative life events was significant prospectively.

Women who experienced multiple negative life events were more likely to report the onset of depression if they lived in neighborhoods high rather than low in economic disadvantage/ disorder. This interaction was significant after controlling for mean differences in the number of recent life events across neighborhood types. It appears that, as predicted, neighborhood disadvantage/disorder may be conceptualized as a vulnerability factor, whose influence is similar to the vulnerability factors previously identified by Brown and Harris (1978). Women who reside in neighborhoods characterized by widespread poverty and crime are more likely to react to negative life events by becoming depressed than women who reside in neighborhoods without these negative characteristics.

According to Brown and Harris (1978), vulnerability factors undermine people's ability to maintain a positive self-image that includes belief in their ability to control the course of their life, retain valued roles, and hold optimistic expectations regarding the future. The impact of negative life events is magnified by vulnerability factors because people do not believe that they have any way to recover, restore, or replace lost tangible or intangible assets (Brown & Harris, 1978). Neighborhoods high on economic disadvantage offer few economic opportunities and few role models for economic success, which undermines optimism and belief in personal mastery among residents. Neighborhoods high on social disorder inhibit the formation of supportive relationships with neighbors, prevent a sense of predictability, and offer threats to physical safety. When negative life events occur in this context, their impact is intensified because the worldview of the victim probably offers little hope for assistance from others and little experience with personal efficacy.

Brown and Harris's (1978) conceptualization of vulnerability factors focuses on cognitive factors that intensify women's negative appraisals of events. It should also be noted that in the absence of needed resources (e.g., access to transportation, child care, and health care), the realities of life in economically disadvantaged/ disorderly neighborhoods make recovery from negative life events objectively more difficult (McLoyd, 1990).

Another potential mechanism through which neighborhoods may influence reactions to negative life events is through links to family dynamics. Sociological research has shown that structural characteristics of neighborhoods predict the behavior of family and peers, which in turn, predict child behavior problems (Brooks-Gunn, Duncan, & Aber, 1995;Conger, Ge, Elder, Lorenz, & Simons, 1994;Sampson & Laub, 1994). Community-level social disorder

negatively predicted the warmth displayed between husbands and wives in behavioral observations of married couples from the current sample (Cutrona et al., 2003). Additional research is needed to investigate links between neighborhood characteristics, interpersonal behavior, and psychopathology (Boyce et al., 1998).

An unexpected finding was that in the prospective analyses, women in better neighborhoods (those low on disadvantage/disorder) were significantly less likely to become depressed if they reported negative life events. Closer examination of this finding revealed that a number of women in better neighborhoods became depressed in the apparent absence of negative life events. In contrast, almost all women in worse neighborhoods who became depressed reported at least one negative life event. The strains of daily life among African Americans who reside in affluent, predominantly White neighborhoods merit further study (Kessler et al., 1999;Sigelman & Welch, 1991).

One of our key predictions was not supported by the results. We predicted a significant interaction between negative affectivity and neighborhood disadvantage/disorder in the prediction of depression onset. Such an interaction was found in a previous analysis of the same data in the prediction of a continuous symptom measure of distress (Cutrona et al., 2000). Although distress was disproportionately high among women high on negative affectivity and neighborhood adversity, our current results suggest that the onset of diagnosable major depression is linked primarily to the combination of negative life events and adverse neighborhood characteristics. In the absence of traumatic life events, life in adverse neighborhood circumstances for those with the tendency to readily experience negative emotions may not be sufficient to trigger the full syndrome of major depression.

The associations between community-level variables and depression were consistently weaker than were the associations between individual-level variables and depression. This is consistent with the findings of Leventhal and Brooks-Gunn (2000), who summarized research on the effects of community context on the outcomes of children and adolescents. They concluded that in most instances, the neighborhood effects reported are small to moderate, and account for only 5% to 10% of the variance in child and adolescent outcomes.

A number of limitations of the current study should be mentioned. It must be emphasized that cause and effect relations cannot be determined on the basis of the correlational data we have analyzed. Additional longitudinal data are needed in which changes in the environment and concomitant changes in mental health are tracked. The census data on which the assessment of economic disadvantage was based were from the 1990 census, which poses a threat to their current accuracy. The block group areas that were combined into neighborhood clusters were not all contiguous, so emergent properties of actual neighborhoods might have been distorted by the combination of nonadjacent areas. The sample comprised only women with a 10- to 12-year-old child, so findings may not be generalizable to a broader spectrum of African American women. Restriction of range in neighborhood characteristics may have prevented some relations from attaining significance (see Stoolmiller, 1999), although we were successful in recruiting from communities with a wide range of SES levels (see Cutrona et al., 2000). Finally, the time commitment required for participation was considerable, so it is possible that the most distressed women felt overwhelmed by the task and thus refused to participate.

In conclusion, our results provide evidence for moderation of individual-level risk factors by neighborhood-level vulnerability factors. Future research should continue to investigate the extent to which contextual factors modify the effects of both risk and resource variables in the prediction of psychopathology.

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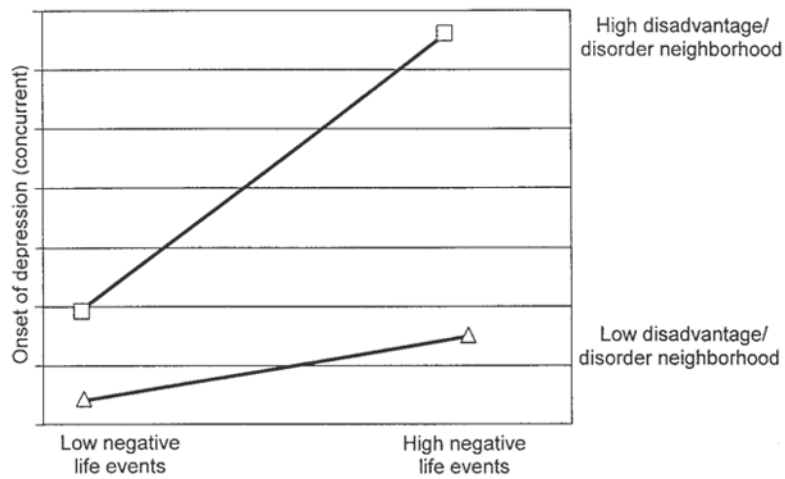
Figure 1.
Moderation of negative life events by neighborhood-level economic disadvantage/disorder in the prediction of the onset of major depression in the past 6 months among women who had not moved for financial reasons in the past 6 months. All data are from the Wave 1 interview. Regression lines are plotted for one standard deviation above the sample mean on neighborhood economic disadvantage/disorder and for one standard deviation below the sample mean on neighborhood economic disadvantage/disorder.
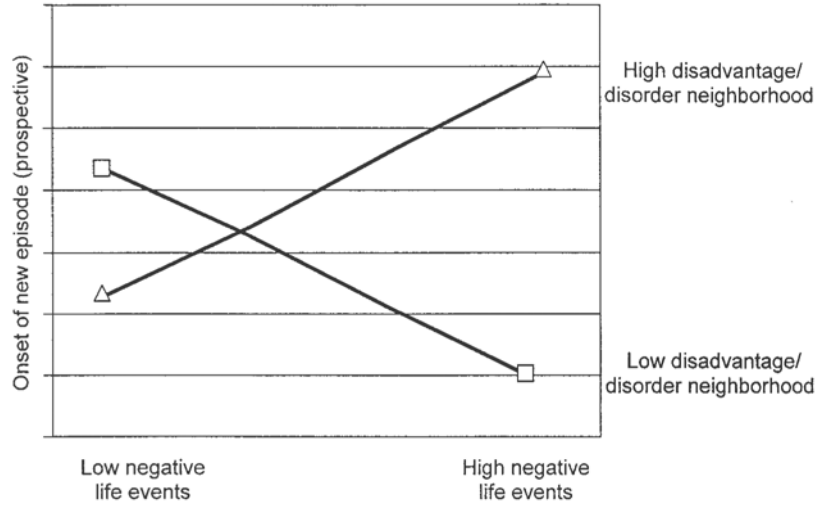
Figure 2.
Moderation of negative life events by neighborhood-level economic disadvantage/disorder in the prediction of onset of major depression in the past 12 months among women who had not moved for any reason in the past 2 years. Life events and neighborhood economic disadvantage/ disorder are from the Wave 1 interview. Cases were defined as women who experienced the onset of an episode of major depression in the past 12 months at Wave 2, who had not reported depression at the Wave 1 interview. Regression lines are plotted for one standard deviation above the sample mean on neighborhood economic disadvantage/disorder and for one standard deviation below the sample mean on neighborhood economic disadvantage/disorder.

Table 1

Frequency of Occurrence of Negative Life Events

Item	*n*
In the past 12 months. . .	
Did you have something valuable robbed or stolen?	39
Were you a victim of sexual harassment?	12
Were you sexually molested, assaulted, or raped?	3
Were you involved in a fire, flood, or other natural disaster?	8
Were you seriously physically attacked or assaulted?	19
Did you witness someone being badly injured or killed?	20
Were you threatened with a weapon, held captive, or kidnapped?	10
Did any close friend or close relative die?	291
Did a relative or in-law have serious marital or family problems?	83
Did you have a still birth or miscarriage?	22
Did you have a son or daughter involved with an unwanted pregnancy?	23
Did you have a family member with a serious illness or injury?	126
Did you have a close friend with serious marital or family problems?	109
Did your partner have an affair?	17

Table 2

Prevalence and Incidence of Major Depressive Disorder

	Wave 1				Wave 2			
	No move for financial reasons in past 12 months *n* = 645		Total sample *N* = 720		No move since Wave 1 (2 years) *n* = 385		Total sample *N* = 631	
Period of depression	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**
Lifetime	13.0	84	13.8	99	12.2	47	13.6	86
Met criteria sometime in previous 12 months	6.4	41	6.8	49	4.4	17	5.5	35
Met criteria sometime in previous 6 months	5.7	37	6.1	44	4.2	16	5.2	33
New episode onset in previous 6 months	3.3	21	3.9	28	2.9	11	2.9	18

Table 3

Correlations Among Individual-Level Variables for Nonmovers

Variable	1	2	3	4	5	6	7
1. Age	—						
2. Education	.04	—					
3. Government assistance	−.08*	−.28****	—				
4. Married	.09*	.21****	−.40****	—			
5. No. of children	−.20****	−.16****	.12***	.01	—		
6. Negative life events	−.03	.07	.00	.05	−.02	—	
7. Negative affectivity	−.09*	−.21****	.17****	−.13***	−.02	.13***	—
Major depression onset (Wave 1)	−.06	−.02	.10***	−.02	.02	.19****	.18***
Major depression onset (Wave 2)[a]	−.09	.01	.10*	−.01	.05	−.03	.20****

Note. $n = 650$ unless noted otherwise. Only women who did not move in the past 12 months for financial reasons were included. All variables except major depression onset at Wave 2 were assessed at Wave 1. Pearson correlation coefficients were computed between continuous variables. Point-biserial correlations were computed for combinations of a dichotomous and a continuous variable. No correlation was computed between depression at Wave 1 and Wave 2 because only new cases of depression were considered at Wave 2.

[a] $n = 385$. Only women who did not move in the past 2 years were included in correlations with Wave 2 depression.

* $p < .05$.

*** $p < .001$.

**** $p < .0001$.

Table 4

Correlations Between Neighborhood Disadvantage/Disorder and Neighborhood Means for Individual-Level Variables for Nonmovers

Variable	Neighborhood-level economic disadvantage/social disorder
Age	−.04
Education	−.72**
Government assistance	.57**
Marital status	−.67**
No. of children	.12
Negative life events	.18
Negative affectivity	.21
Major depression (concurrent)	.31*
Major depression (prospective)	−.08

Note. $n = 41$. To compute correlations, the mean for each individual-level variable was computed for each of the 41 neighborhood clusters. These average values were then correlated with neighborhood characteristics.

*
$p < .05$.

**
$p < .01$.

Table 5

Concurrent Multilevel Logistic Regression Predicting the Onset of Major Depression in Past 6 Months

Step and predictor	df	b	SE	t	Odds ratio	95% confidence interval for odds ratio
Step 1						
Education	599	0.13	0.24	0.54	1.14	0.71–1.82
Age	599	−0.33	0.27	−1.22	0.72	0.42–1.22
Receive government assistance	599	1.45	0.53	2.75[*]	4.26	1.51–12.05
Marital status	599	0.51	0.52	0.99	1.67	0.60–4.61
No. of children	599	−0.05	0.16	−0.29	0.95	0.70–1.30
State	39	0.38	0.54	0.71	1.46	0.51–4.21
Step 2						
Education	599	0.24	0.25	0.97	1.27	0.78–2.08
Age	599	−0.33	0.27	−1.25	0.72	0.42–1.22
Receive government assistance	599	1.38	0.51	2.69[****]	3.97	1.46–10.80
Marital status	599	0.67	0.51	1.30	1.95	0.72–5.31
No. of children	599	−0.05	0.15	−0.32	0.95	0.71–1.28
State	38	0.45	0.55	0.82	1.57	0.53–4.61
Neighborhood disadvantage/ disorder	38	0.65	0.31	2.11[*]	1.92	1.04–3.52
Step 3						
Education	597	0.45	0.31	1.45	1.57	0.85–2.88
Age	597	−0.10	0.33	−0.32	0.90	0.47–1.73
Receive government assistance	597	1.00	0.60	1.68[a]	2.72	0.84–8.81
Marital status	597	0.47	0.60	0.78	1.60	0.49–5.19
No. of children	597	0.13	0.19	0.67	1.14	0.78–1.65
State	38	0.92	0.65	1.41	2.51	0.70–8.97
Neighborhood disadvantage/ disorder	38	0.67	0.36	1.85[a]	1.95	0.97–3.96
Negative life events	597	0.51	0.14	3.63[****]	1.67	1.27–2.19
Negative affectivity	597	0.76	0.24	3.10[*]	2.14	1.34–3.42

Note. $n = 645$. Only women who had not moved in the last 12 months for financial reasons were included.

[a] $p < .10$.

[*] $p < .05$.

[****] $p < .0001$.

Table 6

Prospective Multilevel Logistic Regression Predicting a New Episode of Major Depression in Past 12 Months

Step and predictor	df	b	SE	t	Odds ratio	95% confidence interval for odds ratio
Step 1						
Education	339	0.39	0.31	1.26	1.48	0.80–2.71
Age	339	−1.06	0.40	−2.62**	0.35	0.16–0.76
Receive government assistance	339	1.29	0.60	2.14*	3.63	1.12–11.78
Marital status	339	0.12	0.60	0.20	1.13	0.35–3.65
No. of children	339	0.15	0.20	0.77	1.16	0.79–1.72
State	39	−0.37	0.77	−0.48	0.69	0.15–3.12
Step 2						
Education	339	0.39	0.32	1.21	1.48	0.79–1.72
Age	339	−1.06	0.40	−2.63**	0.35	0.16–0.76
Receive government assistance	339	1.29	0.60	2.13*	3.63	1.12–11.78
Marital status	339	0.08	0.62	0.13	1.08	0.32–3.65
No. of children	339	0.16	0.20	0.81	1.17	0.79–1.74
State	339	−0.34	0.78	−0.43	0.71	0.15–3.28
Neighborhood disadvantage/ disorder	38	−0.10	0.42	−0.24	0.90	0.40–2.06
Step 3						
Education	337	1.09	0.29	3.71***	2.97	1.68–5.25
Age	337	−1.61	0.36	−4.47***	0.20	0.10–0.40
Receive government assistance	337	1.99	0.60	3.34***	7.32	2.26–23.71
Marital status	337	0.24	0.51	0.46	1.27	0.47–3.45
No. of children	337	0.63	0.21	3.08**	1.88	1.24–2.83
State	38	−0.49	1.23	−0.40	0.61	0.05–6.83
Neighborhood disadvantage/ disorder	38	−0.02	0.65	−0.03	0.98	0.27–3.50
Negative life events	337	−0.09	0.16	−0.58	0.91	0.67–1.25
Negative affectivity	337	1.96	0.28	6.88***	7.10	4.10–12.29

Note. $N = 385$. Only women who had not moved in the previous 2 years were included.

*
$p < .05$.

**
$p < .01$.

***
$p < .001$.