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# Neighborhood Disadvantage, Stress, and Drug Use Among Adults\*

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*This paper explores the relationships among neighborhood disadvantage, stress, and the likelihood of drug use in a sample of adults (N = 1,101). Using the 1995 Detroit Area Study in conjunction with tract-level data from the 1990 census, we find a positive relationship between neighborhood disadvantage and drug use, and this relationship remains statistically significant net of controls for individual-level socioeconomic status. Neighborhood disadvantage is moderately associated with drug related behaviors, indirectly through increased social stressors and higher levels of psychological distress among residents of disadvantaged neighborhoods. A residual effect of neighborhood disadvantage remains, net of a large number of socially relevant controls. Finally, results from interactive models suggest that the relationship between neighborhood disadvantage and drug use is most pronounced among individuals with lower incomes.*

Drug use and abuse are routinely listed among a number of social problems that are believed to occur with greater frequency in highly impoverished urban neighborhoods (Wilson 1996; Reeves and Campbell 1994; Anderson 1990). Moreover, whereas social stressors and psychological distress are related to the use and abuse of drugs and alcohol (see Gottheil et al. 1987 for a comprehensive

review), the specific role that neighborhood context may play in the relationship between stress and drug related behaviors remains unexamined. In this paper, we draw on Lin and Ensel's (1989) "life stress" paradigm to explore the complex processes through which individual-level characteristics (e.g., stressors, distress, and personal resources) interact with neighborhood-level socioeconomic characteristics to predict the likelihood of drug use among a sample of Detroit residents. We have two primary research questions. First, does residence in a disadvantaged neighborhood, net of individual-level socioeconomic status, contribute to increased likelihood of drug use? Second, if so, is neighborhood disadvantage associated with drug use through a higher number of social stressors, increased stress

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levels, decreased psychological resources, or decreased social resources among persons residing in disadvantaged areas?

This study makes several contributions. First, our study builds on a growing body of research that links neighborhood socioeconomic context to a number of health outcomes (Robert 1998; Robert 1999; Schulz et al. 2000). Second, because drug use is largely a phenomenon associated with youth (Kandel 1991), the bulk of sociological research on drug related behaviors is limited to samples of adolescents (Kandel 1980); less is known about the drug-related behaviors of adults. Our study uses a sample of adults aged 19–97, thereby extending the scope of research beyond youthful sub-populations. Third, our research contributes to the stress literature by examining the stress process in a broader socio-structural context than that of previous research. As Pearlin (1989) points out, “[M]any stressful experiences . . . don’t spring out of a vacuum but typically can be traced back to surrounding social structures and peoples’ locations within them” (p. 242). This paper responds to this criticism by evaluating the stress process as it unfolds within the social milieu of individuals’ neighborhoods.

## DRUG USE, STRESS, AND NEIGHBORHOOD CONTEXT

### *Stress, Strain, and Drug Use*

Two similar hypotheses exist regarding the relationship between social stressors and drug-related behaviors. First, the *stress reduction hypothesis* suggests that drug use may occur for the relief of varied states of stress and that stress-related drug use may ultimately contribute to abuse and dependency (Rhodes and Leonard 1990; Powers 1987; Lindenberg et al. 1994). Drug use, in this sense, is believed to be a coping mechanism in response to a number of stressful life experiences such as criminal victimization, death of a loved one, divorce, or job termination. Second, *general strain theory* argues that delinquency, in general, and drug use in particular, are positively related to high levels of social strain (Agnew 1992; Agnew and White 1992). Social strain is said to occur when others “(a) prevent or threaten to prevent you from achieving positively valued goals, (b) remove or threaten to remove positively valued

stimuli that you possess, or (c) present or threaten to present you with noxious or negatively valued stimuli” (Agnew and White 1992, p. 475). Because strain is associated with a number of negative emotional states—disappointment, fear, and anger—individuals exposed to high levels of strain engage in delinquent behaviors to alleviate strain, that is, “for achieving positively valued goals, for protecting or retrieving positive stimuli, or for terminating or escaping from negative stimuli” (Agnew and White 1992, p. 477). We find Agnew’s conceptualization of strain-induced drug use useful because it emphasizes the effect of noxious or negative day-to-day stimuli such as insults and rude or discriminatory behaviors from others. In other words, whereas some stress research emphasizes “once-in-a-lifetime” stressful events, chronic social strains are more likely to occur, as Aneshensel (1992) says, “in the conflicts and frustrations experienced by ordinary people doing ordinary things” (p. 20).

Although a sizable body of research examines the hypothesized relationship between stress, distress, and drug use, empirical findings remain somewhat inconsistent. On one hand, a number of researchers have found a positive and significant relationship between levels of psychological distress and substance use, net of a wide range of statistical controls (Agnew and White 1992; see Gottheil et al 1987 for a review). These effects appear to be the same for both illegal and legal substances (Cafferata, Kasper, and Bernstein 1983; Conway et al. 1981; Pearlin and Radabaugh 1976). On the other hand, at times it is unclear whether drug use and abuse are responses to stressors or if these behaviors lead to higher levels of stress. For example, Ginsberg and Greenley (1978) provide evidence from panel data suggesting that drug use leads to stress but they find no evidence that stress leads to drug use. Others have reported weak and insignificant effects of stress levels on drug-related behaviors (Hansell and White 1991; Cooper Russel, and Frone 1990). Therefore, although it is more generally argued that stress leads to drug use and abuse, findings from empirical research on stress and drug related behaviors are far from univocal.

The life stress paradigm (Lin and Ensel 1989; Ensel and Lin 1991; Pearlin 1989; Aneshensel 1992) provides a useful conceptual model to understand the relationship

between stressful experiences, personal resources, and health outcomes. Although the earliest studies in this tradition primarily examined direct links between stress and health, more recent work has demonstrated the importance of personal resources that mediate and buffer the relationship between stress and health. Specifically, Lin and Ensel (1989) point to two important sets of personal resources: (1) social resources, such as integration and social support; and (2) psychological resources, such as self-esteem and personal mastery. Previous research suggests that both social resources and psychological resources may be important mechanisms through which the relationships among stress, distress, and drug-related behaviors operate (Amey and Albrecht 1998; Weinrich et al 1997; Brook, Nomura, and Cohen 1989; Agnew and White 1992; Carvajal et al. 1998).

#### *Neighborhood Disadvantage and Drug Use*

Using the life stress paradigm as our conceptual backdrop we ask: how might neighborhood disadvantage be related to individual-level drug use? We see five possible answers to this question. First, because previous research has documented that key stressful life events such as death of a loved one, job turnover, criminal victimization, and fear of crime occur with greater frequency in highly impoverished urban neighborhoods (Fang et al 1998; Massey and Shibuya 1995; Krivo and Peterson 1996), it is possible that neighborhood disadvantage may increase the number of stressors (life events) that individuals are exposed to. Similarly, neighborhood disadvantage may also be associated with a higher incidence of social strain through negative social interactions with others and the experience of discriminatory behaviors. For example, Kirschenman and Neckerman (1991) found that employers in the Chicago area discriminated against applicants with addresses known to be in "bad" neighborhoods, and these applicants were less likely to be offered employment because they were believed to be less reliable and productive. Similarly, neighborhood disadvantage may increase social strains via heightened police surveillance and police harassment (Anderson 1990).

Second, neighborhood disadvantage may undermine individuals' psychological

resources. For example, Wilson (1996) argues that years of concentrated unemployment in predominantly black, ghetto communities has eroded a sense of personal mastery (self-efficacy) among the residents of these neighborhoods. Borrowing heavily from Bandura's (1986) work, Wilson argues that sustained employment provides a necessary spatial and temporal anchor for day-to-day life and that the absence of ritualized behaviors associated with the work process interferes with individuals' sense of control over their own activities. While there is very little research on neighborhood context and self-concept (e.g., self-esteem and self-efficacy), at least two studies have supported Wilson's claim that concentrated disadvantage is related to low levels of perceived efficacy above and beyond individual-level SES (Sampson, Raudenbush, and Earls 1997; Boardman and Robert 2000).

Third, neighborhood disadvantage may also decrease the social resources available to individuals. It is possible that the family and friends of residents of disadvantaged neighborhoods are exposed to an inflated number of stressors themselves, thus diminishing the extent to which traditional arenas of support can be tapped in times of stress. Moreover, these friends and family members may put additional pressures on individuals, thereby undermining useful coping mechanisms or exacerbating the effects of stress. We know of no study that specifically examines the relationship between neighborhood disadvantage and the amount and nature of familial and friend contact.

Fourth, neighborhood disadvantage may increase levels of psychological distress. For example, Aneshensel and Sucoff (1996) identify a relationship between neighborhood disadvantage and increased level of anxiety and depression among adolescents in Los Angeles. Children living in multi-problem neighborhoods were more likely to perceive ambient risks such as crime, violence, noxious facility noises, decrepit infrastructure, and graffiti that in turn were related to poor mental health outcomes. It is possible, therefore, that higher levels of psychological distress among residents of disadvantaged neighborhoods contribute to an increased likelihood of drug use.

Fifth, neighborhood disadvantage may be associated with drug-related behaviors through unmeasured physical, cultural, or social characteristics unique to different neighborhoods.

In other words, while our understanding of the social dynamics associated with neighborhood context are improved with increased research linking geocoded information with individual-level data, we are often limited to variables collected in the decennial census for our operationalization of “neighborhood context.” To be sure, there may be a number of relevant social characteristics not measured in these key sociodemographic descriptors that may be related to drug related behaviors. For example, disadvantaged neighborhoods may provide a normative context in which substance use and abuse is not sanctioned as strongly as within more affluent neighborhoods. Alternatively, residents of highly impoverished neighborhoods may simply lack the social and material resources necessary to sanction non-normative substance use (Anderson 1990). Residence in an extremely disadvantaged neighborhood may also contribute to drug use simply because drugs are more available in these contexts (Crum, Lillie-Blanton, and Anthony 1996).

**HYPOTHESES**

From the discussion above, we develop six hypotheses that guide our study. Figure 1 elaborates our conceptual framework and indicates the hypothesized relationships between our key variables.

*Main Effects*

*H<sub>1a</sub>: There is a positive relationship between neighborhood disadvantage and drug use.*

*H<sub>1b</sub>: This relationship will remain after controlling for individual-level socioeconomic status.*

*Indirect Effects*

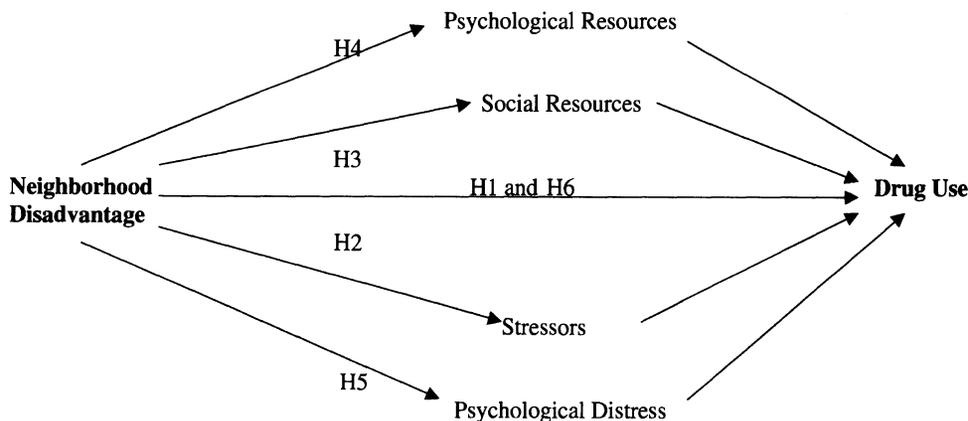
*H<sub>2</sub>: Neighborhood disadvantage increases the likelihood of drug use because it increases the number of social stressors to which individuals are exposed.*

*H<sub>3</sub>: Neighborhood disadvantage increases the likelihood of drug use because it decreases social resources (i.e., decreases family contact, decreases positive social support, and increases negative social interactions) available to individuals.*

*H<sub>4</sub>: Neighborhood disadvantage increases the likelihood of drug use because it decreases psychological resources (e.g., personal mastery and self-esteem) available to individuals.*

*H<sub>5</sub>: Neighborhood disadvantage increases the likelihood of drug use because it increases levels of psychological distress.*

**FIGURE 1. Conceptual Model: Neighborhood Disadvantage, Drug Use, and the Life Stress Paradigm**



Note: Adapted from Lin and Ensel (1989)

### Residual Effects

$H_6$ : *Neighborhood disadvantage is associated with drug use above and beyond individual-level stressors, social resources, psychological resources, and psychological distress.*

## DATA & METHODS

### Sample

The individual-level data for our analyses come from the 1995 Detroit Area Study. The Detroit Area Study is a multistage area probability sample of adult respondents 18 years of age and older residing in Wayne, Oakland, and Macomb counties in the state of Michigan (including the city of Detroit). Blacks were oversampled, and the final sample for the DAS-95 was  $N = 1,139$ . Face-to-face interviews were completed between April and October 1995 by University of Michigan graduate students in a research training practicum in survey research and professional interviewers from the Survey Research Center (70% response rate). In the analyses presented here, we have dropped Hispanic ( $n = 11$ ), Asian American ( $n = 15$ ), and Native American ( $n = 4$ ) respondents, as well as respondents who reported another race/ethnicity ( $n = 3$ ), because of small sample sizes. These deletions combined with five cases in which we were unable to match geocoded information for respondent's census tracts left us with a final  $N$  of 1,101.

We operationalize respondents' neighborhoods as their census tract. Census tracts are inherently designed to be demographically homogeneous. Their boundaries are relatively stable over time and they generally contain between 3,000 and 8,000 residents. Of the 1,088 census tracts in the Detroit tri-county area, DAS-95 respondents represent 139 of these tracts. Data describing these neighborhoods (aggregated at the tract level) were extracted from the 1990 decennial census file 3A (CD-ROM version) and then merged with the individual-level records from the DAS-95.

### Measures

*Drug use.* Detroit Area Study respondents

indicated whether they had used any of the following drugs, outside of medical prescription, in the past 12 months: sedatives, tranquilizers, amphetamines, analgesics/painkillers, inhalants, marijuana, cocaine, crack or free base, LSD or other hallucinogens, and heroin. This variable was coded 1 if respondents reported using any of these drugs, and 0 otherwise.

*Neighborhood Disadvantage.* This paper is primarily concerned with neighborhood-level socioeconomic status and uses four summary statistics of respondents' census tracts: (1) percent living below the poverty line, (2) percent of households that are headed by a female, (3) male unemployment rate, and (4) percent of families receiving public assistance. We standardized each variable based on the values contained in the 1990 census from Oakland, Wayne, and Macomb counties and then summed these four values to create our measure. These characteristics are highly interrelated, and previous research (Sampson et al 1997) has demonstrated that these variables load on one single factor that can be described as *neighborhood disadvantage* ( $\alpha = .97$  in this sample).

*Social stressors.* Our analyses use two different measures of social stressors: (1) life stress and (2) social strain. *Life stress* was measured with a count of the following five stressful life events that occurred in the past 12 months: (1) a serious illness or injury that started to get worse, (2) was the victim of a serious physical attack or assault, (3) was robbed or had home burglarized, (4) had serious financial problems or difficulties, and (5) had someone close die? ( $\alpha = .88$ ). Our second measure of social stressors is derived from Agnew's (1992) "general strain theory" of social strain and delinquency and has been used in previous research on stress-related well-being (Schulz et al. 2000). In brief, this measure taps everyday unfair treatment (see Williams, Yu, and Jackson 1997 for detailed discussion of this variable) with response to the following nine questions:

In your day to day life, how often have any of the following things occurred to you: (a) you are treated with less courtesy than other people, (b) you are treated with less respect than other people, (c) you receive poorer service than other people at restaurants and stores, (d) people act as if they think you are not smart, (e) people act as if they are afraid of you, (f) people act as if they think you

are dishonest, (g) people act as if they're better than you, (h) you are called names or insulted, (i) you are threatened or harassed.

Responses for these items ranged from 1 ("never") to 5 ("very often") and scores were summed and then averaged across the nine questions ( $\alpha = .88$ ).

*Psychological resources.* Two measures of psychological resources were used in these analyses: self-esteem and personal mastery. *Self-esteem* was measured with an unweighted, four item index from the Rosenberg Self-Esteem Scale (Rosenberg 1979). Respondents were asked to indicate how strongly they agreed or disagreed with the following statements: (1) "I feel that I am a person of worth, at least on equal basis with others," (2) "All in all, I am inclined to feel that I am a failure," (3) "I am able to do things as well as most other people," and (4) "I feel I do not have much to be proud of." Responses for each of the items ranged from 1 ("strongly agree") to 4 ("strongly disagree"). Items were recoded where appropriate to ensure that higher scores reflect greater self-esteem ( $\alpha = .66$ ). Scores were summed for each respondent and then averaged across the four items. The sense of *personal mastery* was measured in a similar fashion to self-esteem. This four-item index (Pearlin et al. 1981) reflects responses to the following four items: (1) "I can do just about anything I really set my mind to do," (2) "there is really no way I can solve some of the problems I have," (3) "I often feel helpless in dealing with the problems of life," and (4) "what happens to me in the future mostly depends on me." Again, items were recoded where appropriate so that higher values reflect higher levels of personal mastery ( $\alpha = .53$ ). Scores were summed for each respondent and then averaged across the four items.

*Social resources.* We use three measures of social resources: (1) family contact, (2) positive social support, and (3) negative social interactions. *Family contact* was measured by response to the following question: "How often are you in contact with any members of your family—that is, any of your brothers, sisters, parents, or children who do not live with you—including visits, phone calls, letters, or electronic mail messages?" Response alternatives ranged from 0 ("Never") to 10 ("Everyday"). *Positive social support* was measured via an unweighted, two-item index tapping support from both family and friends.

Respondents were asked, "How much do your family members make you feel loved and cared for." They were then asked the same question about their friends. Response alternatives ranged from 1 ("Not at all") to 5 ("A great deal"). The scores were summed for each respondent and then averaged across the two-items ( $\alpha = .51$ ). *Negative social interactions* were measured via an unweighted two-item index tapping negative support from both family and friends. Respondents were asked "How much do you feel your family members make too many demands on you?," and "what about your friends?" Responses ranged from 1 ("Not at all") to 5 ("A great deal"). The scores were summed for each respondent and then averaged across the two-items ( $\alpha = .65$ ).

*Psychological distress.* In our study, we follow Lin and Ensel (1989) and treat psychological distress as an independent variable associated with health outcomes, rather than as an outcome in and of itself. We measure psychological distress with an unweighted six-item index. Respondents were asked to indicate how often, in the past 30 days, they felt: (1) "so sad that nothing could cheer you up;" (2) "nervous;" (3) "restless or fidgety;" (4) "hopeless;" (5) "that everything was an effort;" and (6) "worthless." Responses for each item range from 1 ("never") to 5 ("very often"). Items were coded to ensure that higher scores reflect greater levels of distress ( $\alpha = .85$ ). Scores were summed and then averaged across the six items.

*Socio-demographic controls.* Previous research has identified relationships between several core sociodemographic characteristics and drug related behaviors (Kandel 1991). Accordingly, all analyses in this paper utilize statistical controls for: (1) sex (female = 1); (2) age (in years); (3) education (continuous variable measuring highest grade of school completed [0–17]); (4) income (family income in \$10,000's); (5) race (black = 1, non-Hispanic white = 0); (6) employment status (employed, unemployed, or out of the workforce); and (7) marital status (married = 1; all other = 0).

### Statistical Analyses

We first present means and standard deviations for our key variables of interest and their bivariate correlations with our neighborhood disadvantage estimate (Table 1). We then esti-

**TABLE 1. Descriptive Statistics: Neighborhood Disadvantage and the Life-stress Paradigm.**

	Mean	Std Dev	Bivariate Correlation with Neighborhood Disadvantage
<i>Stressors</i>			
Stressful Life Events	.831	.957	$r = .243, p < .001$
Social Strain	1.893	.709	$r = .198, p < .001$
<i>Social Resources</i>			
Family Contact	8.890	1.691	$r = .082, p < .006$
Negative Interactions	2.173	1.006	$r = .086, p < .004$
Positive Support	4.169	.768	$r = -.064, p < .034$
<i>Psychological Resources</i>			
Self-Esteem	3.769	.373	$r = .006, p < .345$
Personal Mastery	3.352	.523	$r = -.064, p < .891$
<i>Psychological Distress</i>			
	1.981	.824	$r = .129, p < .001$

Note: Tests of statistical significance are two-tailed.

mate the mean neighborhood disadvantage values for those who reported using drugs in the last year compared to those who reported using no drugs in the past year (Table 2). Following these descriptive statistics, we estimate our baseline contextual effects model to assess if there is a relationship between neighborhood disadvantage and drug use above and beyond individual-level socioeconomic status. We use a logistic regression model (see Menard [1995] for a useful overview of this model) in which our primary dependent variable (drug use) is coded 1 if respondents reported using drugs in the last year and 0 otherwise (Table 3). Following this model, we enter piecewise blocks of predictor variables to assess the degree to which each of our variables of interest—social resources, psychological resources, stressors, and distress—help explain the hypothesized relationship between neighborhood disadvantage and drug use. Full-model estimates with standardized regression coefficients are then presented to estimate the relative explanatory power of neighborhood disadvantage vis-à-vis our other predictors in the model (Table 4). Table 4 also presents full-model estimates and includes an interaction between neighborhood disadvantage and individual-level socioeconomic status (yearly income) to assess how neighborhood disadvan-

tage impacts drug related behaviors for individuals with different yearly incomes.

The analysis of data from multiple levels presents special problems to researchers. Perhaps the most pressing concern is that single-level modeling of hierarchical data fails to consider the potential dependence among outcomes of respondents from the same “level” (neighborhoods). As a result, the standard errors may be mis-specified, and erroneous substantive conclusions can be formulated based on these artificially deflated error terms and subsequently inflated t-ratios (Burstein 1978). We test for the relevance of these concerns by comparing model statistics from a standard (single-level) logistic regression and a random-effects (intercept only) logistic regression model (see Guo and Zhao [2000] for an overview of this model) using the GLIMMIX macro for SAS 8.0 (Wolfinger and O’Connell 1993). As with other findings utilizing multi-level modeling techniques (e.g., Ross, Reynolds, and Geis 2000), the parameter estimate for the neighborhood-level (level 2) variance (random intercept only) ( $\sigma_u^2$ ) was not statistically different from zero, nor did it significantly improve model-fit. Therefore, in the name of parsimony, we estimate traditional single-level, “fixed effects” logistic regression models (see Snijders and Bosker 1999, p. 22).

**TABLE 2. Mean Neighborhood Disadvantage Score by Individual-Level Drug Use (Detroit Area Study (1995), N = 1101).**

	Reported Drug Use		Total
	Yes	No	
Mean Neighborhood Disadvantage (standard deviation)	1.426 (4.008)	0.793 (3.670)	.892 (3.730)
N	173	928	1101

Note: Mean scores differ significantly;  $p < .05$  (two-tailed).

**TABLE 3. Unstandardized Logistic Regression Coefficients: Neighborhood Disadvantage, Stress, and Drug Use.**

	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	1.212 (.648)	-.070 (.722)	1.050 (.929)	2.682 (1.072)	.074 (.713)
Sociodemographic Covariates					
African American	-.586* (.267)	-.837** (.281)	-.695** (.270)	-.545* (.269)	-.551* (.270)
Age (years)	-.050*** (.007)	-.045*** (.007)	-.049*** (.007)	-.052*** (.007)	-.049*** (.007)
Female	-.567 (.185)	-.535** (.191)	-.598** (.192)	-.561** (.186)	-.623*** (.188)
Education (years)	.002 (.045)	-.001 (.045)	.014 (.046)	.011 (.045)	.020 (.045)
Family Income (\$10,000s)	-.035 (.036)	-.010 (.036)	-.034 (.038)	-.026 (.037)	-.025 (.036)
Married	-.432* (.209)	-.397* (.213)	-.454* (.211)	-.432* (.209)	-.431* (.210)
Employment Status [Employed]					
Unemployed	.274 (.318)	.167 (.323)	.248 (.321)	.240 (.319)	.209 (.320)
Out of the Workforce	-.158 (.261)	-.252 (.266)	-.130 (.262)	-.206 (.263)	-.248 (.266)
Neighborhood Disadvantage	.079* (.037)	.073* (.038)	.078* (.037)	.081* (.037)	.073* (.037)
Stressors					
Stressful Life Events		.402*** (.092)			
Social Strain		.366** (.131)			
Social Resources					
Family Contact			.057 (.059)		
Negative Interactions			.050** (.087)		
Positive Support			-.263* (.115)		
Psychological Resources					
Self-Esteem				-.322* (.166)	
Personal Mastery				-.110 (.195)	
Psychological Distress					.414*** (.107)
-2Log Likelihood	841.96	808.50	826.06	829.10	827.18
Chi-Square	116.08***	33.46***	15.90**	12.86**	14.78***
d. f.	9	2	3	2	1

\*\*\*  $p < .001$ ; \*\*  $p < .01$ ; \*  $p < .05$ ; (two-tailed) Standard error in parentheses.

## FINDINGS

Table 1 presents descriptive statistics for our key individual-level predictors and their respective bivariate relationships with our neighborhood disadvantage score. Following our conceptual model, we find that neighborhood disadvantage is positively related to higher levels of stress, lower social resources, and higher levels of psychological distress. We find no evidence that either psychological resource (self-esteem and personal mastery) varies significantly by neighborhood disadvantage. To

assess the relationship between neighborhood disadvantage and the likelihood of drug use, Table 2 presents the mean neighborhood disadvantage scores for individuals who reported using drugs in the last year compared to those who reported using no drugs in the past year. We find support for Hypothesis 1a because the mean neighborhood disadvantage score is nearly twice as large (1.426 compared to .793) for respondents who reported using drugs compared to those who did not report using any drugs in the past year.

It is possible, however, that this relationship

**TABLE 4. Logistic Regression Coefficients: Full and Interactive Models.**

	Full Model		Interactive
	b	B	b
Intercept	-.817 (1.527)		-.941 (1.536)
Sociodemographic Controls			
African-American	-.804 (.284)	-.221**	-.681* (.292)
Age	-.045 (.008)	-.428***	-.043*** (.008)
Female	-.632 (.197)	-.169**	-.673*** (.199)
Education (years)	.017 (.046)	.023	.020 (.047)
Family Income (\$10,000s)	-.010 (.038)	-.017	-.049 (.042)
Married	-.388 (.215)	-.105+	-.331 (.218)
Employment Status [Employed]			
Unemployed	.125 (.327)	.016	-.000 (.334)
Out of Workforce	-.303 (.273)	-.078	-.374 (.277)
Neighborhood Disadvantage	0.068 (.038)	.140+	.119** (.044)
Stressors			
Stressful Life Events	.360 (.094)	.190***	.349*** (.095)
Social Strain	.212 (.145)	.083	.200 (.147)
Social Resources			
Family Contact	.074 (.059)	.070	.078 (.060)
Negative Interactions	.132 (.092)	.073	.148 (.093)
Positive Support	-.160 (.121)	-.067	-.148 (.122)
Psychological Resources			
Self-Esteem	-.074 (.105)	-.015	-.112 (.286)
Personal Mastery	0.111 (.210)	.032	.145 (.212)
Psychological Distress	.246 (.129)	.112*	.236+ (.130)
Interaction Term			
Neighborhood Disadvantage × Family Income			-.025* (.011)
-2 Log Likelihood	797.79		792.28
Chi-Square	44.17***		5.51*
d. f.	8		1

\*\*\*  $p < .001$ , \*\*  $p < .01$ , \*  $p < .05$ , +  $p < .10$  (two-tailed) standard error in parentheses.

is simply due to individual-level socioeconomic factors that are more common among residents of disadvantaged neighborhoods. To evaluate the extent to which neighborhood disadvantage affects drug related behaviors over and above individual-level characteristics, we control for race, age, sex, education, family income, marital status, and employment status in a logistic regression model (Table 3). Model 1 in Table 3 tests our first hypothesis (H1b)

that there is a positive relationship between neighborhood disadvantage and drug use, net of individual-level socioeconomic status. This hypothesis is supported by the coefficient for neighborhood disadvantage that is positive and statistically significant ( $b = .079$ ,  $p < .05$ ). According to this value, a one unit increase in our neighborhood disadvantage score increases the relative odds of using drugs by 8.2 percent. Models 2–5 test the hypotheses regarding

the roles of stress, social resources, psychological resources, and psychological distress in mediating the effects of neighborhood disadvantage on drug use, and our results are mixed. Consistent with H2, the coefficients for social stressors (Table 2, Model 2) are positive and statistically significant (Stressful Life Events,  $b = .402, p < .001$ ; Social Strain,  $b = .366, p < .001$ ), however, controlling for stressors only moderately decreases the estimated net effect of neighborhood disadvantage. Similarly, while both positive social support and negative social interactions are strongly related to the likelihood of drug use (Table 2, Model 3), controlling for these variables only alters the estimated net effect of neighborhood disadvantage by a small amount suggesting that the effect of neighborhood disadvantage on drug use is not mediated by social resources (H3). Similarly, while self-esteem is inversely associated with drug use (Table 2, Model 4), controlling for psychological resources, in general, did not change the effect of neighborhood disadvantage on drug use (H4). In addition, we find relatively weak evidence in support for H5; psychological distress is positively associated with drug use (Table 2, Model 5), but controlling for psychological distress only decreased the net effect of neighborhood disadvantage by a small amount.

Hypothesis 6 suggests that neighborhood disadvantage has an effect on drug use above and beyond the estimated effects of individual-level stressors, social resources, psychological resources, psychological distress, and socio-demographics. We find tentative support for this hypothesis because the effect of neighborhood disadvantage (Table 4, Full Model) remains positive and (marginally) statistically significant ( $b = .068, p < .10$ ), net of our entire set of control variables. It is important to note, however, that while the unstandardized effect of neighborhood disadvantage is not large in magnitude, the standardized effect ( $\beta = .140$ ) suggests that neighborhood disadvantage is at least as (or more) important in explaining drug related behaviors as is individual-level education and income, as well as social and psychological resources.

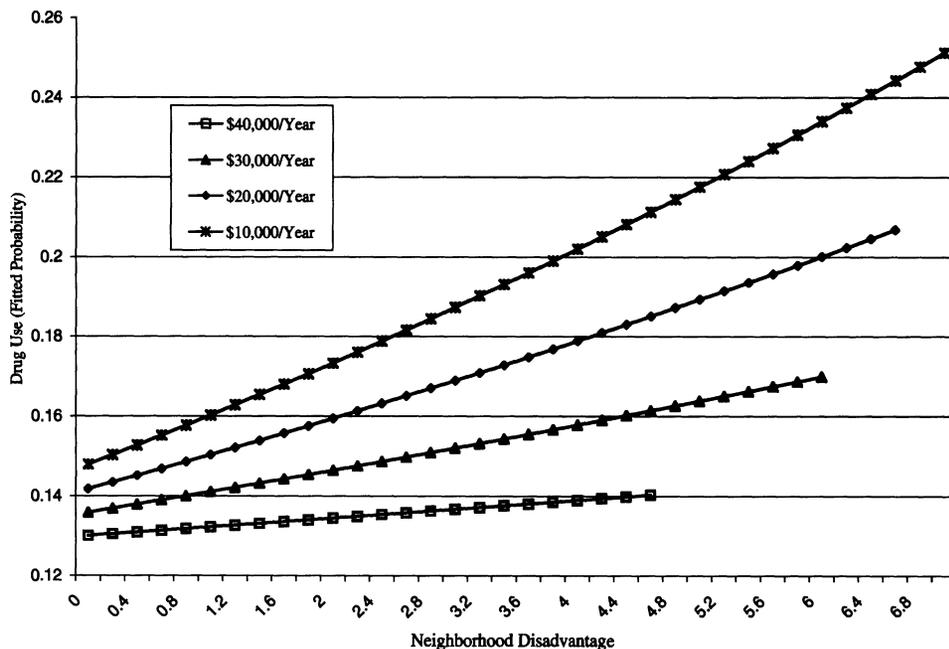
Last, we specify a model in which we test for differential effects of neighborhood context on drug use by individual-level income. Specifically, we are interested in the *double jeopardy* hypothesis, which suggests that the effect of low neighborhood socioeconomic sta-

tus is potentially exacerbated by low individual-level socioeconomic status and may ultimately lead to poorer health and health behaviors (e.g., Wilson 1996). For example, those who are unable to afford health services are also faced with a lack of health service infrastructure and services in their communities. Results from these interaction models are presented in the second column of Table 3. According to these values ( $b = -.025, p < .05$ ), the estimated net effect of neighborhood disadvantage on drug use among adults is most pronounced among individuals with low incomes. In other words, the relationship between neighborhood-level socioeconomic status and likelihood of drug use is significantly moderated by individual-level socioeconomic status. To better illustrate the significance of this finding, we plot predicted values from these parameter estimates for four income levels (\$10,000, \$20,000, \$30,000, and \$40,000) in Figure 2. We only estimate positive scores, which represent neighborhood disadvantage. In addition, because the number of relatively affluent persons living in disadvantaged neighborhoods is quite small we also limit the range of values to those below the 90th percentile of scores for each income bracket. First, it is important to note that the estimated effect of neighborhood disadvantage on drug related behaviors is most pronounced among poorer respondents. Second, it is equally significant that neighborhood disadvantage does not play a meaningful role among individuals with annual family incomes of \$40,000. In other words, family income may offer an important health buffer to the otherwise negative effects associated with neighborhood disadvantage.

## DISCUSSION

A growing body of research explores the independent effects of community context on health behaviors and health outcomes. Our study contributes to this literature by investigating the relationship between neighborhood socioeconomic status and adult drug use, linking data on census tracts in the Detroit metro area with data from a large-scale survey of area residents. Several features of this study are particularly noteworthy: (1) we develop a model that integrates work on residential context with insights from the life stress paradigm,

**FIGURE 2. Differential Effect of Neighborhood Disadvantage on the Likelihood of Drug Use by Individual-Level SES (Fitted Probabilities)**



which guides much of the micro-level research on social antecedents of health; (2) we examine drug use among adults (rather than juveniles); and (3) we use a multi-item (composite) indicator of neighborhood disadvantage.

Our results indicate that neighborhood disadvantage has a significant effect on the likelihood of adult drug use above and beyond the influence of individual-level socioeconomic status and other sociodemographic factors. Moreover, although the estimated net effects of residential context are relatively small in magnitude, such effects may be especially important because even modest shifts in neighborhood socioeconomic status have the potential to impact thousands of individuals. Our findings also shed light on the processes through which neighborhood socioeconomic status shapes patterns of drug use. As predicted by the logic of the life stress paradigm, a modest portion of the neighborhood effect may be explained by the fact that residents of disadvantaged areas encounter more social stressors, on average, than other persons in the Detroit Tri-County area—i.e., more frequent negative life events and conditions (e.g., criminal victimization, illness, financial problems) and higher levels of social strain (e.g., discrimination and maltreatment by others)—as well

as higher levels of psychological distress. Contrary to expectations, however, the higher risk of drug use in low-socioeconomic contexts does not appear to result from deficits in key coping resources, such as supportive social ties or favorable self-perceptions (e.g., self-esteem and personal mastery).

What factors might account for this link between neighborhood disadvantage and drug use? We see several possibilities. Residents of highly disadvantaged areas may experience greater exposure to drugs (especially illicit substances) and drug dealers, as well as greater contact with drug users (e.g., neighbors, friends and relatives, strangers entering the neighborhood in search of drugs) (Crum, Lillie-Blanton, and Anthony 1996). Residents of disadvantaged neighborhoods may also experience exposure to norms and values that endorse or tolerate this form of deviant conduct. Referred to as “collective socialization” (Jencks and Mayer 1989), this explanation generally emphasizes the independent effect of positive role models within particular social contexts. In terms of drug-related behaviors, high levels of neighborhood poverty, unemployment, and welfare receipt may indicate a limited number of positive social role models and/or limited social networks to mainstream

avenues of socioeconomic attainment (Wilson 1987; Tigges, Browne, and Green 1998). For example, Anderson (1990) argues that there are fewer "old heads" that provide direct anti-deviance lessons, and those elder residents that remain are often marginalized and have limited credibility to serve as effective role models.

In addition, these neighborhoods may have low levels of community organization (e.g., few or no social clubs, block associations, etc.) and collective efficacy, and may therefore have less ability than other, higher-SES neighborhoods to sanction drug dealing or drug use, or to mobilize collectively to stem the flow of drugs into the community. Massey and Denton (1993) have argued that the physical concentration of poverty in certain neighborhoods signifies a "breakdown in social order and security . . . [and] promotes psychological and physical withdrawal from the community" (p. 138). Similarly, recent research has posited that residents of disadvantaged neighborhoods experience high levels of collective stress above and beyond the individual level stresses and strains, such as: prejudice, discrimination, a lack of community attention and resources, and a number of other community contextual factors that add to the stress and strain of an individual's coping resources (e.g., crime, decrepit infrastructure, a lack of parks, greenery and recreational facilities, poor selection of food services and grocery stores, and an overabundance of over-priced, liquor and convenience stores). While researchers have focused on other issues such as crime rates and political participation (e.g., Cohen and Dawson 1993; Sampson et al. 1997), their links with health behaviors and health outcomes clearly merit closer attention from investigators.

Robert (1999) points out that one potential linkage between neighborhood socioeconomic status and health involves the availability of health care networks and services. Thus, it is conceivable that part of the explanation for the direct effects of neighborhood disadvantage reported in this study is that residents of such deteriorating areas lack access to adequate substance abuse counseling and treatment facilities. The development of contextual databases that directly measure the characteristics mentioned above (rather than census level proxy variables such as income, unemployment, and poverty) should also be an priority for researchers.

One of our key findings is that the effects of

neighborhood disadvantage on drug use appear to be vary according to individual's yearly income. In particular, the deleterious effects of neighborhood disadvantage were most pronounced among individuals with low yearly incomes (\$10,000 per year) compared to individuals with higher incomes. Indeed, neighborhood disadvantage does not appear to affect the likelihood of drug use among individuals with incomes greater than \$40,000/year. There are at least two reasonable explanations for this finding. First, it is possible that the geographic scope of a person's social networks varies significantly by their socioeconomic status. Specifically, the social networks of persons from poor families may be more geographically concentrated compared to more affluent persons. Therefore, the increased effect of neighborhood disadvantage among poor persons is more understandable when you consider the possibility that non poor persons residing in poor communities may spend less time and interact with fewer of their neighbors than poor persons in these same neighborhoods. Moreover, if drug use is more common in highly disadvantaged neighborhoods, then social contact among neighbors may be one of the primary mechanisms through which the increased risk of drug use operates. Second, yearly family income is an important material resource that individuals can draw upon during stressful life events and the otherwise noxious stimuli associated with daily stressors. These resources help buoy persons during otherwise difficult life situations. They provide a number of more salubrious mechanisms to assuage feelings of depression, anxiety, and despair than drug use, which, for some, may be a convenient and affordable coping response. In addition, our finding that neighborhood disadvantage is associated with increased drug use primarily among individuals with low yearly incomes points to the central importance of immediate material resources in helping decrease the likelihood of drug use among residents of impoverished communities.

There are two methodological issues that we believe the readers should entertain when considering our findings. First, because our data are cross-sectional in nature it is important to consider the possibility that the relationships specified in this paper may be opposite in direction. In other words, is possible that neighborhood disadvantage does not lead to drug use but rather higher rates of drug use in

a neighborhood may ultimately lead to increased levels of neighborhood disadvantage. According to this understanding, high rates of drug use may be one of the primary causal factors driving the decline in neighborhood socioeconomic status. It is also possible that individuals with high rates of drug use may simply be more likely to migrate to relatively disadvantaged neighborhoods because of the perceived or real convenience of obtaining drugs. In this sense, neighborhood disadvantage is certainly related to levels of drug use but not as a primary explanatory variable, *per se*. Studies should explore these issues using longitudinal data, in order to rule out possible selection processes and to elucidate causal linkages. Second, it is also important to remember that our "residual effect" of neighborhood is contingent on the type and scope of covariates. In other words, any assumed "causality" associated with neighborhood disadvantage is dependent on the individual-level variables that we do (or more importantly) *do not* include in our models.

Last, further work in this area might investigate the possible role of race/ethnicity, gender, age, and other factors in moderating neighborhood effects on adult drug use and other individual-level health outcomes; it seems unlikely that neighborhood disadvantage operates in the same way for all subgroups of the population, and for all health outcomes and behaviors. Similarly, future research in this area might evaluate a wider range of relevant contextual predictors. For example, previous research has shown that *neighborhood stability* is an important predictor of individual-level well-being but that this effect varies significantly by the socioeconomic characteristics of the neighborhood (Ross et al. 2000). Closer attention to these issues will further enrich our understanding of the complex and understudied influence of residential context on individual health and well-being.

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