

## **Long-term Effects of Neighborhood Poverty and Crime on Negative Self-feelings**

Heili Pals, *Texas A&M University*

Howard B. Kaplan, *Texas A&M University*

This paper analyzes the long-term effects of neighborhood poverty and crime on young adults' negative self-feelings. First, we replicate the concurrent studies based on previous literature and apply similar hypotheses for the longitudinal effect. Next, we compare the cumulative disadvantage and relative stress hypotheses explanations in two situations: 1) assessing the effect of the combination of neighborhood crime and economic disadvantage, and 2) assessing the effect of the combination of neighborhood and individual level economic disadvantage. We employ a longitudinal study of Young Adults following a generation of young people mainly in the Houston area. We measure the perception of neighborhood contexts during adolescence and in young adulthood. The results show the importance of assessing longitudinal effects as they differ from concurrent ones. We find support for the relative stress hypothesis and do not find support for the cumulative disadvantage hypothesis when assessing the effect of adolescent neighborhood context on adult negative self-feelings.

## **Long-term effects of neighborhood poverty and crime on negative self-feelings.**

Heili Pals & Howard B. Kaplan

DRAFT, PLEASE DO NOT QUOTE

Neighborhood effects affecting problem behaviors and health-related outcomes have gained increasing interest in the literature (Sampson et al. 2002). To contribute to this line of research, we aim to focus on the long-term effects of neighborhood poverty and crime on young adults' negative self-feelings. The importance of studying negative self-feelings is multifold. It affects one's general mental health, but also acts as a mediator often leading to deviant outcomes (Agnew & White 1992; Kaplan 1976; Kaplan & Lin 2005; Kaplan & Lin 2000). For example, psychological distress has been found to be associated with substance use (Agnew & White 1992; Gottheil et al. 1987); and, depression has been associated with other negative health outcomes (Baldwin & O'Brien 2002; Jiang et al. 2002; MacMahon & Gregory 2002; Maddock & Pariante 2001).

Several studies have found a linkage between individual economic disadvantage and poor mental health (Baum et al. 1999; Rios et al. 2001; Turner et al. 1999). Robert (1998) assesses the effect of community-level socioeconomic status on adult health when controlling for individual level socioeconomic background. She finds that although individual level socioeconomic indicators are better predictors of health than neighborhood level indicators, there are still some independent effects of neighborhood, over and above the individual level effects.

Thus, it is important to consider neighborhood effects in addition to individual level economic characteristics when analyzing mental health outcomes. Ross (2000) finds that residents of poor, mother-only neighborhoods have higher levels of depression. She finds that

contextual effect is diminished, but still present when controlling for individual level socioeconomic context. Aneshensel and Sucoff (1996) suggest that the economic status of a neighborhood affects adolescent mental health through the perception of crime in neighborhood. Schulz et al. (2000) show that poor neighborhoods are associated with higher psychological distress.

With this paper, we add to the discussion of the interrelations between individual and neighborhood context and mental health. Our main aim is to compare the validity of two competing theories when analyzing the over-time neighborhood effects on negative self-feelings. We evaluate comparatively the cumulative advantage hypothesis and the relative stress hypothesis. We are able to overcome many individual challenges in previous research. Due to the use of longitudinal data we are able to compare both concurrent and longitudinal effects of neighborhood context on adult negative self-feelings, controlling for the initial level of negative self-feelings. In addition, we are not limited to only one measure of neighborhood context. Instead, we focus on the combination of different characteristics, such as economic problems and perception of crime in the neighborhood. We consider both individual and neighborhood level indicators of economic disadvantage. Furthermore, we estimate interaction effects between neighborhood and individual level economic problems to establish whether the economic context in the neighborhood affects people from different economic backgrounds in a similar fashion.

## **Hypotheses**

In their classic work Shaw and McKay (1942) identify neighborhood economic disadvantage as the most influential community-level predictor in fostering criminal activity. Previous studies focusing on the relationship between neighborhood context and mental health

find that economic problems in the neighborhood are also associated with higher likelihood of mental health problems concurrently (Ross 2000). Aneshensel and Sucoff (1996) in their study of adolescents in Los Angeles find that perception of crime in one's neighborhood is associated with anxiety and depression. Following these prior studies we expect both neighborhood economic problems and crime in one's neighborhood to be associated with higher levels of negative self-feelings concurrently, both in adolescence and in young adulthood.

H1A: In a concurrent analysis, controlling for individual level socioeconomic background, the perception of neighborhood economic disadvantage and crime in neighborhood are associated with higher levels of negative self-feelings.

Ross (2000), in her concurrent analysis of adult depression, finds that the effect of neighborhood poverty and female headship on depression is fully mediated by the perception of neighborhood disorder (a measure that includes both physical disorder and fear of crime). Thus, it is not the effect of economic disadvantage per se that is related to depression. Rather, economically disadvantaged neighborhoods are more likely to experience crime and therefore are associated with higher level of depression due to higher perception of crime.

H1B: In a concurrent analysis, the effect of the perception of neighborhood economic disadvantage on negative self-feelings is mediated by the perception of crime in neighborhood.

While the majority of the studies on the relationship between neighborhood context and mental health focus only on the concurrent effects of neighborhood context (Aneshensel & Sucoff 1996; Ross 2000; Schulz et al. 2000) they do acknowledge the importance of analyzing longitudinal effects. An interesting example of an experimental design taking advantage of longitudinal information is the study by Leventhal and Brooks-Gunn (2003). They follow up

families moving from public housing to both low- and high-poverty neighborhoods and find that those moving to low-poverty neighborhoods reported significantly less distress than those who remained in high-poverty neighborhoods. Wheaton and Clarke (2003) find that a current neighborhood has no effect on early adult mental health, controlling for the childhood neighborhood. This confirms that longitudinal studies are of the utmost importance in the field of neighborhood contexts and mental health. We are able to compare these results with our analysis of the effect of the neighborhood perception in adolescence (at age 11-13) and the neighborhood perception at young adulthood (age 20-24) on negative self-feelings at young adulthood, controlling for negative self-feelings in adolescence.

H2A: The perception of neighborhood economic disadvantage and crime in adolescence influence negative self-feelings in young adulthood, controlling for initial level of negative self-feelings and individual level socioeconomic background.

Longitudinal studies of mental health so far have not considered neighborhood economic disadvantage and the perception of crime simultaneously. As the concurrent studies suggest, considering economic disadvantage and crime together might reveal more than if we would treat these neighborhood characteristics separately. Social disorganization theory has often been used to describe the relationship between neighborhood context and mental health (Aneshensel & Sucoff 1996; Cutrona et al. 2000; Ross & Jang 2000; Ross & Mirowsky 2001; Stiffman et al. 1999). The perception of social disorganization is commonly defined as perception of crime, substance use, prostitution, etc. in neighborhood. Social disorganization theory would posit that, similar to concurrent studies, perception of crime, rather than neighborhood economic disadvantage increases negative self-feelings. While both neighborhood economic disadvantage

and perception of crime define a stressful context, the fear of crime has been shown to put stronger emotional strain on people (Ross & Mirowsky 2001). Latkin and Curry (2003) focus on inner-city impoverished neighborhoods to assess the effect of neighborhood social disorganization on depression. They find that neighborhood social disorganization indeed increased depression in a 9-month follow-up. Ross and Mirowsky (2001) theorize that fear of crime is the primary mechanism linking neighborhood disorder and health. Following the same line of thought, we expect the perception of crime to increase negative self-feelings and have a stronger effect than the perception of neighborhood disadvantage over time.

H2B: The perception of crime in neighborhood in adolescence is a stronger positive predictor of negative self-feelings in young adulthood than the perception of neighborhood economic problems.

Aneshensel and Sucoff (1996) consider both neighborhood socioeconomic context and the perception and fear of crime in neighborhood. However, they do not estimate the effect of crime based on the economic conditions, assuming that the crime in neighborhood affects individuals in similar fashion, no matter whether they live in an affluent or poor neighborhood. Similarly, Latkin and Curry (2003) find short-term longitudinal effect of social disorganization, but focus only on inner-city impoverished neighborhoods without considering affluent neighborhoods and therefore cannot establish whether perception of crime acts similarly in impoverished and in more affluent neighborhoods.

It is likely that neighborhood crime does influence negative self-feelings differently, depending on the level of economic disadvantage in the neighborhood. However, previous studies cannot guide us in understanding the interaction between neighborhood crime and economic disadvantage. Theoretically, two different solutions are possible. First, the *cumulative*

*disadvantage hypothesis* would suggest that the more disadvantage one person experiences, the worse are her outcomes. Thus, people living in the economically disadvantaged neighborhood with crime would develop the highest levels of negative self-feelings. The added effect of neighborhood crime would be higher in the economically disadvantaged neighborhoods.

H3A: The perception of crime in neighborhood in adolescence increases adult negative self-feelings more in a neighborhood with economic problems than in an affluent neighborhood.

*Relative stress hypothesis*, however, would predict an opposite interaction. Rather than having a stronger effect in a neighborhood that is already disadvantaged, relative stress hypothesis would predict crime to have stronger effect on adult negative self-feelings in an affluent neighborhood. While crime is quite expected in an economically disadvantaged neighborhood, it is something that is not expected in an affluent neighborhood. Thus, the presence of crime is seen as more threatening in a neighborhood that otherwise does not have problems.

H3B: The perception of crime in neighborhood in adolescence increases adult negative self-feelings more in an affluent neighborhood than in a neighborhood with economic problems.

Similar considerations would apply for the interaction between neighborhood and individual level socioeconomic background. Very little has been done in analyzing the effects of neighborhood in combination with individual characteristics. However, it is important to consider both neighborhood and individual economic context in combination to determine whether for example people in impoverished neighborhoods have worse outcomes simply because they themselves live in poverty or whether also people who are better off have lower

outcomes in impoverished neighborhoods. The cumulative disadvantage theory (or double jeopardy hypothesis) (Wilson 1996) would suggest that the effect of neighborhood problems is exacerbated by economic problems at individual level. Following this type of argument, Boardman and associates (2001) have found that neighborhood disadvantage has the most pronounced effects on drug use for low-income individuals. Based on their findings, neighborhood context does not affect the likelihood of drug use among individuals with incomes greater than \$40,000 a year. Similar interactions might be important for mental health as well.

Ross (2000) in her concurrent study of depression tests for interaction effects between neighborhood disadvantage and individual level economic indicators, but does not find any significant interactions. Wheaton and Clarke (2003) find that childhood neighborhood increases the probability of early adult externalizing problems for those whose parents have very little education. Childhood neighborhood disadvantage does not affect externalizing problems for those whose parents have at least college education. Thus, their findings suggest a *compound or cumulative disadvantage* explanation: the mental health is lowest for those who are doubly disadvantaged through both individual and neighborhood level economic context and highest for those who do not have either of the disadvantages.

H4A1: Those who experienced economic problems both at individual and neighborhood levels in adolescence have the highest levels of negative self-feelings in young adulthood.

H4A2: Those who did not experience economic problems both at individual and neighborhood levels in adolescence have the lowest levels of negative self-feelings in young adulthood.



However, similar to the interaction between neighborhood crime and economic disadvantage, the *relative stress* hypothesis is also theoretically possible. Based on the relative stress hypothesis, those who compare themselves to others who are better off would experience high levels of negative self-feelings. Those who compare themselves to others that are worse off would experience the lowest levels of negative self-feelings. Thus, the relative status viewpoint would predict the highest level of negative self-feelings for those who are poor, but live in an affluent neighborhood. They would compare themselves to people that are better off economically and thus, relatively, feel worse than those of the same economic background in a poor neighborhood. Affluent people in poor neighborhood should experience the lowest levels of negative self-feelings, because comparatively they are wealthier than others around them.

H4B1: Those with economic problems at individual level living in a neighborhood without economic problems in adolescence have the highest levels of negative self-feelings in young adulthood.

H4B2: Those without economic problems at individual level living in a neighborhood with economic problems in adolescence have the lowest levels of negative self-feelings in young adulthood.

## **Data and Methods**

We employ a longitudinal study of Young Adults following a generation of young people primarily in Houston, TX area. The survey was started in 1971 by Dr. Howard Kaplan. The first wave includes half of the 7th graders in the Houston area in 1971 (G1T1). Six follow-up interviews were conducted until respondents were in their middle ages. An additional study was launched interviewing the children of the original respondents in 1994-2000 (G2T1). A subset of

these 11-13 year old second generation (G2) children were interviewed from 1997-1999 (G2T2) and again in 2003-2007 (G2T3). We use the first and third waves of the second generation (G2) data, thus following the respondents from adolescence to young adulthood (1,340 respondents were interviewed both in the first and the third wave of the G2 study).

*Negative Self-Feelings.* We measure negative self-feelings both in adolescence (first wave) and in young adulthood (third wave). Negative self-feelings is measured by a sum of depression, anxiety, and self-derogation (Kaplan & Lin 2005), each of which is a separate sum of a set of dichotomous indicator variables. Anxiety is a sum of whether a respondent is bothered by bad dreams, sweaty hands, and headaches, is often angry, is mind wandering and has difficulties in keeping her mind on things, sitting still, and sleeping. A sum of not feeling in good spirits, not being a happy person, and not getting fun out of life, represents depression. Self-derogation is measured by feeling useless, no good, and not having respect for oneself. The final measure of negative self feelings (NSF) varies from 0 to 13 with a mean of 3.97 and standard deviation of 3.11 in adolescence and a mean of 2.96 and standard deviation of 2.79 in young adulthood.

*The Perception of Neighborhood Context.* To measure neighborhood context we use respondents' self-reports regarding different types of problems occurring in their neighborhood. In both first and third wave of the study the respondents were asked whether or not a total of 13 different problems occur in their neighborhood. The original questions are dichotomous variables (yes, a problem occurs; no, it does not occur in my neighborhood). Therefore, a conventional factor analysis is not suitable for index creation as it assumes continuous indicators. Instead, we use principal component analysis based on polychoric correlations (estimated in Stata) and exploratory factor analysis using weighted least squares mean and variance adjusted estimator in

Mplus. Both methods suggest a similar solution of two factors: economic problems (high unemployment, abandoned houses, run down buildings and yards, winos and junkies, prostitution) and crime in neighborhood (sexual assaults or rapes, burglaries and thefts, assaults and muggings, organized crime, racial groups not getting along with each other, and gangs). We create the indexes of economic problems and crime in neighborhood by summing across these variables both in adolescence and in young adulthood.

*Individual Economic Background.* We measure individual level economic background through three different measures: parents' years of education, self-perception of social class in adolescence, and an indicator of experiencing economic problems in the family. For the last measure we used three questions from the first wave of the study. If a person reported that her family is pretty poor, her parents were laid off last year, or that they cannot buy needed things or must depend on others because they do not have a job, then we coded this person as having economic difficulties in adolescence. If none of those conditions were present then the respondent was coded as not having economic difficulties. In wave 3 we are able to measure individual economic problems directly as the respondents were asked whether they had any financial difficulties in the last year. Thus, instead of using the three indicators as in wave 1, we measure individual level economic difficulties directly in wave 3.

*Methods.* Controlling for early self-feelings (depression, anxiety, and self-derogation), we explore the long-term effect of neighborhood contexts on negative self-feelings when respondents are on average 20-24 years old. We use interaction terms to analyze the effect of the incongruence of individual and neighborhood economic conditions and the simultaneous effect of different types of neighborhood characteristics. The models control for gender and race.

We present linear regression models with OLS estimators (estimated with Stata). However, because some of the regression assumptions are not completely met, we estimate the same models with variety of other methods. We use models with robust estimators (relaxing the heteroskedasticity assumption), median regression (correcting for non-normality of residuals), and robust regression (to down weight the influence of outliers). All these methods yield the same conclusions, giving us confidence that the mild deviations of assumptions do not affect our results.

To illustrate and better understand the longitudinal effects of neighborhood context in adolescence we estimate a path model using MPLUS (Muthen & Muthen 2007). We use the weighted least squares mean and variance adjusted (WLSMV) estimator and Delta parameterization. We estimate negative self-feelings as a latent variable using anxiety, depression, and self-derogation indexes as indicators. To illustrate the interaction effects, we calculate predicted values of an average person, varying the values of main explanatory variables.

## **Results**

Table 1 explores concurrent effects of neighborhood context in adolescence (first and second column) and in young adulthood (third and fourth column). All the results here are cross-sectional. Thus, the predictors for adolescent negative self-feelings are from adolescence (average age is from 11 to 13 years) and the predictors for negative self-feelings in young adulthood are from young adulthood (average age 22-24).

The effect of individual level socioeconomic indicators is relatively constant and in the expected direction in both waves. The higher one's perceived social class either in adolescence

or in adulthood, the lower negative self-feelings. Those whose family has experienced economic problems in adolescence, or who have experienced economic problems themselves in young adulthood have higher levels of negative self-feelings. Parental education is significant only in adolescence, but retains the sign in young adulthood: the higher the parents' level of education, the lower negative self-feelings. Interestingly, females are less likely to have negative self-feelings in adolescence, but more likely in young adulthood.

[Table 1 about here]

The effect of the perception of neighborhood economic problems is positive and significant both in adolescence and in young adulthood when we do not control for the perception of crime, over and above the effect of economic problems in family, self-perception of social class, and parents' years of education. However, the effect of neighborhood economic problems is weaker in adulthood than in adolescence. Including the perception of neighborhood crime in the model reduces the effect of neighborhood economic disadvantage in adolescence (second column) and completely mediates the effect in young adulthood (fourth column). This result supports our hypothesis 1B and is in agreement with Ross (2000). She finds, using a sample of adults in a concurrent study, that neighborhood disadvantage (measured with Census measures) is completely mediated through the perception of neighborhood disorder. Our results indicate that a similar mediating effect is present also in adolescence; however, some independent effect of the neighborhood disadvantage still persists. The significant effect of the perception of neighborhood disadvantage in adolescence when controlling for the perception of crime (second column) supports the findings from Wheaton and Clarke (2003). They conclude that the neighborhood disadvantage is more important in childhood than in adulthood.

[Table 2 about here]

We explore the longitudinal effects of neighborhood conditions in Table 2. Here, the dependent variable is negative self-feelings in young adulthood when the respondents were about 22-24 years old. The first model assesses the over time effect of adolescent neighborhood conditions on adult negative self-feelings without controlling for the initial level of negative self-feelings in adolescence. Neighborhood crime has the same positive effect on negative self-feelings as seen before. Thus, crime in the neighborhood where a person lived in adolescence has long-term impact on increasing negative self-feelings into young adulthood. Interestingly, though, instead of a positive coefficient for the economic problems in the neighborhood, we see a negative effect. It is not significant if not controlling for the initial level of negative self-feelings; however, it becomes significant at  $p < .05$  level when we control for the initial level of negative self-feelings in adolescence (second column). Thus, perceiving your neighborhood to have economic problems in one's adolescence, keeping the level of crime constant, reduces the change in negative self-feelings from adolescence to young adulthood. The significant negative effect of neighborhood disadvantage is not present if not controlling for crime (the result not presented in table).

In the next models (model 3 and 4) we test whether this protective effect still persists if we control for the perception of neighborhood in young adulthood. Model 3 includes the perception of neighborhood economic problems in the third wave. The longitudinal negative effect of neighborhood economic problems persists even when controlling for the neighborhood economic disadvantage in young adulthood. The concurrent effect of economic problems is positive, similarly to what was presented in Table 1. However, once we include the effect of crime in neighborhood from the latest wave, the effect of crime in adolescence and the effect of

economic problems in young adulthood disappear.<sup>1</sup> The long-term protective effect of economic problems persists ( $p < .01$ ). Thus, controlling for the initial level of negative self-feelings in adolescence, neighborhood economic problems during adolescence seems to operate as a protective factor, reducing the level of negative self-feelings in young adulthood<sup>2</sup>. The effect of crime in the neighborhood seems to be a more immediate effect: once we control for time 3 neighborhood crime, the neighborhood crime from adolescence loses its significance.

The longitudinal analysis reveals another interesting result: when controlling for initial level of negative self-feelings (i.e. essentially modeling the change in negative self-feelings from adolescence to young adulthood) individual level economic indicators lose their significance as compared to concurrent effects. Thus, neither parents' years of education, perception of social class, nor experiencing economic problems in adolescence affect the development of negative self-feelings from adolescence to young adulthood in general.

To disentangle and better understand the longitudinal effects of neighborhood context we estimate a structural equation model in Mplus using neighborhood context and negative self-feelings from both adolescence and young adulthood. Each of those constructs is modeled as a latent factor using a range of indicators (see the note below Figure 1); however, for simplicity, the indicators are omitted from the graph presented here.

[Figure 1 about here]

This analysis indicates that adolescent neighborhood crime increases negative self-feelings in young adulthood both through increasing negative self-feelings in adolescence but

---

<sup>1</sup> The perceptions of neighborhood economic problems and crime are correlated in both waves (at .58). However, there are no multicollinearity problems: even when we include both measures from both waves the tolerances are all above .6.

<sup>2</sup> One could argue that this effect is due to ceiling effect – people in economically disadvantaged neighborhoods have high negative self-feelings to begin with and therefore have no opportunity to experience change other than toward lower levels of negative self-feelings. This hypothesis is not true as there is enough variation in adolescent negative self-feelings for those who lived in economically disadvantaged neighborhoods in adolescence.

also directly. Neighborhood economic problems in adolescence do increase negative self-feelings in young adulthood, but only through its association with crime in the neighborhood. There is no independent effect of economic problems in neighborhood on adolescent negative self-feelings and the effect on negative self-feelings in adulthood is negative. Thus, when we take into account the effect neighborhood economic disadvantage has through the presence of crime in neighborhood, the remaining longitudinal effect on adult negative self-feelings is negative. That means, neighborhood economic disadvantage has dual effects on negative self-feelings: indirectly increasing the effect through the association with neighborhood crime and a direct protective effect, once we separate out its indirect effect through the presence of crime.

Previous research does not directly indicate on a possibility that longitudinally, neighborhood economic disadvantage might have a protective effect on adult mental health once we take into account its positive effect through the fear of crime. However, several possible explanations for this protective effect exist. One possible reason for this is that enduring economically difficult neighborhood conditions in adolescence makes individuals more resilient. They have already managed to prevail in disadvantaged neighborhood, and thus the neighborhood disadvantage does not increase their negative self-feelings further. Another possible explanation is that the perception of the neighborhood economic disadvantage, while controlling for crime, might be a protective effect on change in negative self-feelings over time because of relative perception. People who lived in an economically disadvantaged neighborhood compare themselves to their neighbors who are poor and therefore have less stress in living up to their neighbors. This explanation is more plausible if we find that for next two sets of hypotheses the relative stress hypothesis, rather than the cumulative disadvantage hypothesis, is a better explanation of longitudinal effects of neighborhood context on negative self-feelings.



To test the first set of these competing hypotheses H3A and H3B we dichotomize the measure of neighborhood economic problems in adolescence and interact it with the continuous measure of neighborhood crime. This allows us to test the effect of the perception of neighborhood crime depending on the level of neighborhood economic disadvantage. The first column in Table 3 presents the results without the interaction effect. Again, we see that the perception of crime increases negative self-feelings, while the perception of neighborhood economic problems decreases negative self-feelings over time.

[Table 3 about here]

Interaction between the two neighborhood characteristics is negative and significant. This means that the effect of the perception of crime is weaker in neighborhoods with economic problems than in neighborhoods without economic problems. This supports the *relative stress* hypothesis (H3B): the perception of crime is a stronger predictor of negative self-feelings in an environment where it is especially threatening. People in affluent neighborhoods do not expect crime and are likely to perceive it to be more threatening than in poor neighborhoods, where crime is more likely.

[Figure 2 about here]

To understand the interaction better, we plotted the predicted negative self-feelings in adulthood based on the regression model in the second column of Table 3. As seen from Figure 2 the perception of crime in neighborhoods increases negative self-feelings over time only in the neighborhoods without any economic problems and does not affect negative self-feelings over time in the economically disadvantaged neighborhoods. People in affluent neighborhoods are likely to have almost one standard deviation higher negative self-feelings if they perceive their neighborhood to be crime-ridden (all 6 crime indicators present) as compared to not perceiving

any crimes in the neighborhood. In reality, in the sample used in the regression, none of the respondents living in neighborhoods with no economic problems perceive all 6 crimes present. The majority of people perceive their neighborhood to be crime free (67%). However, many do perceive crime in their neighborhood: 21% have listed one crime problem; 8% two problems, 3% three problems, and 1% four problems. Thus, this result still applies to 279 respondents who live in an affluent neighborhood, but do perceive crime in their neighborhood.

This result is confirmed by another analysis where we used dichotomous indicators of the combination of crime and economic problems instead of the interaction effect.<sup>3</sup> We included indicators for three combinations in the regression model with the same controls: 1) neighborhoods with no economic problems, but with crime; 2) neighborhood with economic problems and crime; 3) neighborhood with economic problems without crime. These dichotomies indicated that those who in adolescence lived in the neighborhood with no economic problems but with crime present had the highest levels of negative self-feelings in young adulthood. This supports our relative stress hypothesis.

The last set of hypotheses (H4A1 to H4B2) offers differing predictions for the interaction between neighborhood and individual level economic disadvantage based on the same cumulative disadvantage and relative stress approaches. Cumulative disadvantage hypothesis predicts the lowest levels of negative self-feelings for those who do not experience economic disadvantage in either level (affluent in an affluent neighborhood). It predicts the highest levels of negative self-feelings for those who experience economic disadvantage at both neighborhood and individual level (poor in poor neighborhood). The competing relative stress hypothesis predicts the lowest levels of negative self-feelings for affluent people living in a poor neighborhood and highest levels of negative self-feelings for poor people living in an affluent

---

<sup>3</sup> The table for this analysis is available upon request from authors.

neighborhood. To test these hypotheses we modeled interactions between the dichotomous measure of neighborhood economic problems with the indicator of family economic problems and social class (see Table 4).

[Table 4 about here]

Both interactions are significant and retain their significance when included simultaneously in the same model. We also tested a three-way interaction; however, it was not significant. To better understand the results of these interaction effects, we calculated predicted values for adult negative self-feelings for white females with 15 years of education and average level of adolescent negative self-feelings living in a neighborhood with average level of crime in adolescence. These predicted values are presented in Table 5.

[Table 5 about here]

The upper section of this table describes the combination between neighborhood and family economic problems in adolescence. The predicted value of adult negative self-feelings for those without any family economic problems living in a neighborhood with economic problems is significantly lower than the predicted values for other combinations of neighborhood and family economic problems. This supports the relative stress hypothesis – an affluent person in a poor neighborhood in adolescence has the lowest level of negative self-feelings in young adulthood. The predicted values for other combinations are not significantly different from each other.

The lower section of this table presents the combination between neighborhood economic problems and social class. Here the predicted value of adult negative self-feelings for those with lower social class living in a neighborhood with no economic problems is the highest of all the other predicted values. Again, this supports the relative stress hypothesis – a poor person living

in an affluent neighborhood in adolescence has the highest levels of negative self-feelings in young adulthood.

The longitudinal analysis does not offer support for the cumulative disadvantage hypothesis. For the combination of family and neighborhood economic problems, the predicted negative self-feelings for poor living in a poor neighborhood is the highest in terms of absolute value, however, it is not significantly higher than the negative self-feelings for those living in an affluent neighborhood.

## **Discussion**

The main aim of this paper was to explore the longitudinal effects of neighborhood context on negative self-feelings in adulthood. To our knowledge, there are no studies focusing on long-term longitudinal effect of the combination of different neighborhood characteristics and the combination of neighborhood and individual level disadvantage on mental health. Using unique longitudinal data we are able to control for initial level of negative self-feelings, thus lending confidence to the direction of the effect – that neighborhood context is indeed affecting adult negative self-feelings and not *vice versa*.

The first sets of hypotheses were constructed based on earlier studies of mental health and depression. We showed that concurrently we find similar effects of neighborhood context as found in earlier studies. We extend the same hypotheses to the longitudinal data and find partial support. We found that adolescent neighborhood crime increases adult negative self-feelings replicating the concurrent results. However, we also find a surprising protective effect of adolescent neighborhood disadvantage when controlling for neighborhood crime. One of the potential explanations of this relates to relative stress hypothesis – people in disadvantaged

neighborhoods compare themselves to poor neighborhoods and thus do not have as high level of stress in living up to neighbors as they would in an affluent neighborhood.

We continue with more precise tests to test the predictive power of two competing approaches: cumulative disadvantage approach and the relative stress hypothesis. The first would predict the highest levels of negative self-feelings for those who have cumulatively the highest levels of disadvantage. The second, however, predicts the highest levels of negative self-feelings for certain incongruent situations.

We estimate two interaction models to test these competing hypotheses: 1) interaction between economic disadvantage and crime in neighborhood, and 2) interaction between neighborhood and individual level economic disadvantage. Both tests find support for the relative stress hypothesis and do not support the cumulative disadvantage hypothesis. The highest increase in negative self-feelings can be found for those who live in an affluent neighborhood with crime and not in a poor neighborhood with crime. Similarly, the highest increase in negative self-feelings can be found for poor living in an affluent neighborhood, not for poor in poor neighborhood. Affluent persons in poor neighborhood have the lowest levels of negative self-feelings in young adulthood as compared to other combinations of individual and neighborhood level economic context.

These results show that the relationship between adolescent neighborhood context and adult negative self-feelings is far more complex than previous literature would suggest. More longitudinal studies that would allow the comparison of different neighborhood characteristics while controlling for individual level socioeconomic background and initial level of negative self-feelings are needed.

In the current paper we focus on respondents' perception of their neighborhood context. Hadley-Ives et al. (2000) examine the relationship between perceived and actual neighborhood characteristics and mental health and found perceived neighborhood characteristics to have a stronger association to mental health status than measure of actual neighborhood characteristics. In future analyses we plan to compare self-reports with similar measures from US Census data. One such comparison could be between the self-report of neighborhood economic problems and an index of Census indicators of economic problems in the neighborhood (i.e. percent unemployed, percent vacant houses, and percent below poverty).

Using Census measures poses several methodological difficulties. First, one has to connect the address of each respondent to a census geocode in order to merge the Census data with the survey data. Next, a suitable definition of a neighborhood needs to be selected. Census uses tracts, block groups, and blocks as most commonly used measures of neighborhoods. Due to confidentiality issues, not all of the information is available for all levels. Block group might be a reasonable compromise between preciseness of the neighborhood and data availability. When using respondents' perception of their neighborhoods, the definition of the neighborhood is not really a problem, as each respondent defines it for him or herself, whereas while using Census data, the neighborhood is left to be defined by the researcher.

Also, when using a perception of the neighborhood, one-level regression models can be used since not all residents in the same neighborhood see their neighborhood in a similar way. Census data requires the use of two-level regression models (HLM). The problem with HLM and survey data, though, is that the respondents often live within a large geographical area, with only few respondents living in the same neighborhood based on Census. If many block groups have very few respondents, a larger geographical definition of a neighborhood might be needed in

order to use hierarchical models. Thus, while very fruitful and needed, the comparison of the self-report and Census measures of neighborhood context on negative self-feelings requires solving multiple complicated, but not impossible methodological hurdles. The next step in our analysis is to overcome these hurdles.

**Table 1.** Unstandardized Coefficients from Linear Regression of Concurrent Relationships between the Perception of Neighborhood Context and Negative Self-feelings in Adolescence (T1) and Young Adulthood (T3) (Young Adult Survey, G2, waves 1 & 3).

	Negative Self-Feelings			
	T1 <sup>a</sup>	T1 <sup>a</sup>	T3	T3
<i>Neighborhood Context</i>				
Economic problems <sup>b</sup>	.46 ***	.23 *	.15 †	-.12
Crime <sup>b</sup>		.35 ***		.48 ***
<i>T1 Control Variables</i>				
Female	-.35 *	-.30 †	.45 **	.50 **
Black	.08	.10	-.75 ***	-.72 ***
Hispanic	.30	.22	-.42	-.52 *
Parents' years of education	-.10 **	-.09 **	-.04	-.04
Self-perception of social class <sup>b</sup>	-.39 ***	-.39 ***	-.22 **	-.21 *
Family economic problems <sup>b</sup>	1.08 ***	.96 ***	1.21 ***	1.16 ***
Constant	6.83 ***	6.43 ***	3.82 ***	3.58 ***
F-statistic (d.f.= 7 or 8)	20.06 ***	20.31 ***	15.07 ***	16.98 ***
Change in F-statistic (d.f. = 1) <sup>c</sup>	31.86 *	26.12 *	3.30 **	15.63 ***
R-square	.10	.12	.09	.11
Valid N	1,226	1,226	1,124	1,124

<sup>a</sup> The effects of main explanatory variables remain essentially unchanged if we include the whole T1 sample in the regression predicting T1NSF. We present the T1-T3 sample for comparability with other models.

<sup>b</sup> Measured in T1 (first & second column) and in T3 (third & fourth column).

<sup>c</sup> Change in model fit calculated for the inclusion of neighborhood context variables.

\*\*\* p<.001; \*\* p<.01; \* p<.05; † p<.10 (two-sided test)

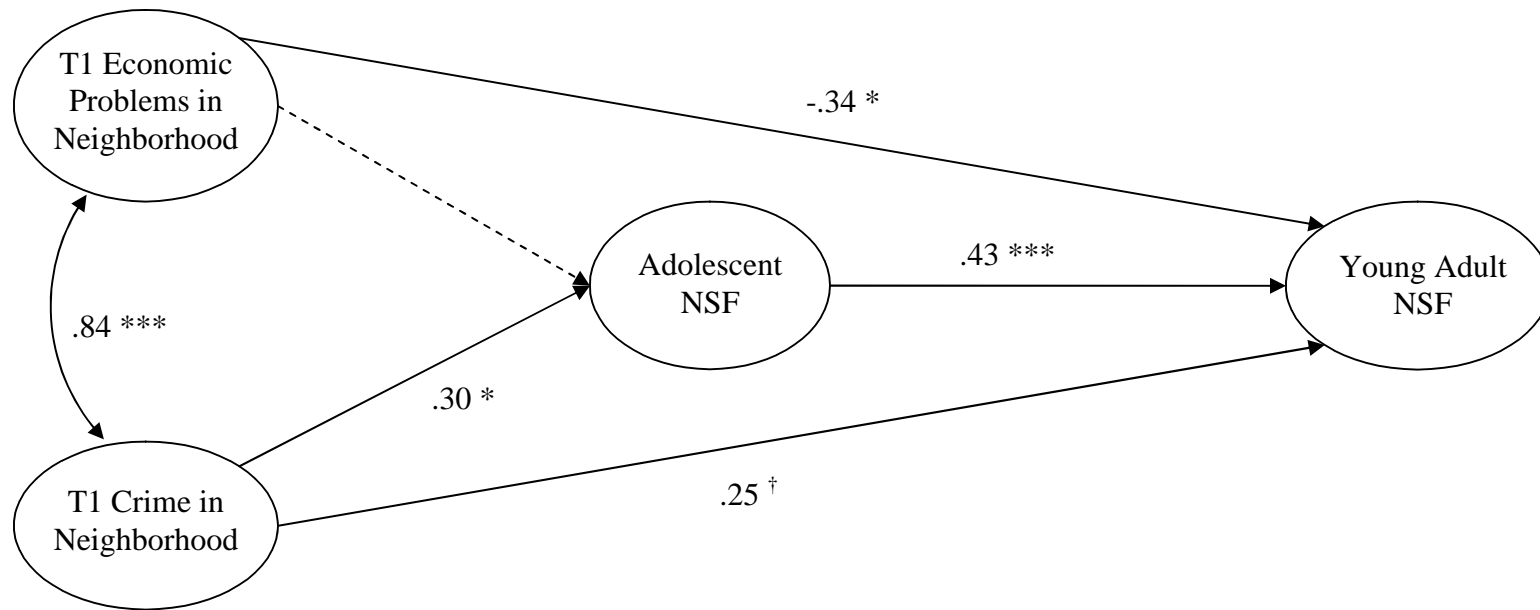


**Table 2.** Unstandardized Coefficients from Linear Regression of Longitudinal Effects of the Perception of Adolescent Neighborhood Context on Negative Self-Feelings in Young Adulthood (Young Adult Survey, G2, waves 1 & 3).

	T3 Negative Self-Feelings			
	M1	M2	M3	M4
<i>T1 Neighborhood Context</i>				
Economic problems	-.18	-.24 *	-.29 **	-.26 **
Crime	.23 **	.16 *	.16 *	.10
<i>T3 Neighborhood Context</i>				
Economic problems			.27 **	.02
Crime				.44 ***
<i>T1 Control Variables</i>				
Female	.56 **	.62 ***	.62 ***	.67 ***
Black	-.43 *	-.40 *	-.53 *	-.47 *
Hispanic	-.38	-.40	-.41	-.50
Parents' years of education	-.07 *	-.05	-.03	-.03
Self-perception of social class	-.14	-.04	-.02	-.00
Family economic problems	.60 **	.34	.31	.27
Negative self-feelings		.23 ***	.22 ***	.22 ***
Constant	4.23 ***	2.66 ***	2.35 ***	2.14 ***
F-statistic	5.13 ***	11.71 ***	11.56 ***	12.66 ***
Degrees of freedom	8	9	10	11
Change in F-statistic <sup>a</sup>	4.11 *	61.01 ***	9.32 **	21.40 ***
Degrees of freedom	2	1	1	1
R-square	.04	.09	.10	.12
Valid N	1,047	1,047	1,047	1,047

<sup>a</sup> In the first column the change in model fit is calculated for the inclusion of T1 neighborhood context variables.

\*\*\* p<.001; \*\* p<.01; \* p<.05 (two-sided test)



**Figure 1.** Concurrent and Longitudinal Effects of the Perception of Adolescent Neighborhood Context on Negative Self-Feelings

Note: CFI = .985; RMSEA = .024; standardized coefficients; factor loadings for indicators of latent constructs shown in table below. Young Adults Study, Waves G2-T1 and G2-T3, Valid N=1,094; dotted line indicates a non-significant relationship; \*\*\*  $p < .001$ ; \*\*  $p < .01$ ; \*  $p < .05$ ;  $^\dagger p < .10$  (two-sided test).

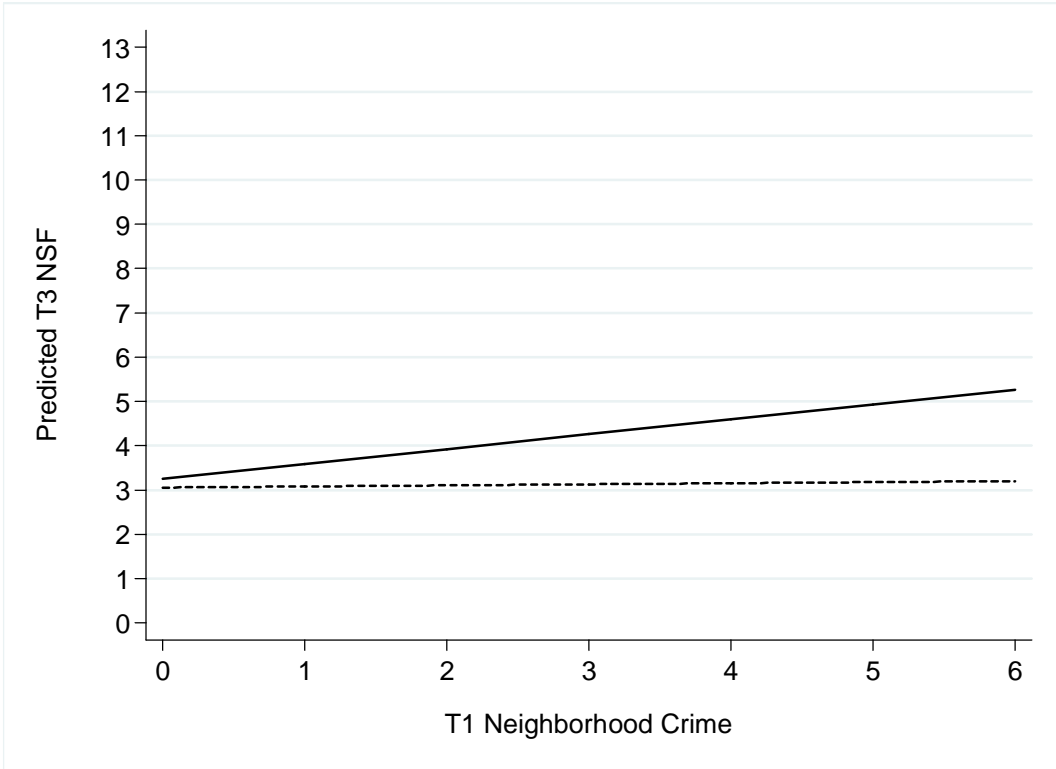
T1 NSF		T3 NSF		T1 Neighborhood Economic Problems		T1 Neighborhood Crime	
Depression	.57	Depression	.73	High unemployment	.63	Groups fighting	.71
Self-derogation	.65	Self-derogation	.75	Winos and junkies	.85	Sexual assaults	.78
Anxiety	.75	Anxiety	.65	Prostitution	.81	Burglaries	.71
				Abandoned houses	.78	Mafia	.80
				Run down buildings and yards	.74	Muggings	.86
						Gangs	.84

**Table 3.** Effect of the Perception of Neighborhood Crime by Economic Conditions in the Neighborhood on Adult Negative Self-feelings, Unstandardized Coefficients from Linear Regression (Young Adult Survey, G2, waves 1 & 3).

	T3 Negative Self-Feelings	
	M1	M2
<i>T1 Neighborhood Context</i>		
1 or more economic problems	-.50 *	-.20
Crime	.14 †	.33 **
1 or more economic problems * Crime		-.31 *
<i>T1 Control Variables</i>		
Female	.54 ***	.55 ***
Black	-.51 **	-.54 **
Hispanic	-.42 †	-.47 †
Parents' years of education	-.04	-.04
Self-perception of social class	-.04	-.04
Family economic problems	.45 *	.46 *
Negative self-feelings	.22 ***	.22 ***
Constant	2.74 ***	2.67 ***
F-statistic (d.f.)	11.99 *** (9)	11.27 *** (10)
Change in F-statistic (d.f.) <sup>a</sup>	3.61 * (2)	4.48 * (1)
R-square	.09	.10
Valid N	1,090	1,090

<sup>a</sup> In model 1 change in model fit calculated for the inclusion of T1 neighborhood context variables, in model 2 for the inclusion of the interaction effect.

\*\*\* p<.001; \*\* p<.01; \* p<.05; † p<.10 (two-sided test)



**Figure 2.** The Effect of the Perception of Neighborhood Crime by Economic Problems in Neighborhood on Negative Self-Feelings in Young Adulthood

Notes: T1 Neighborhood economic problems: — none; - - - - - one or more

**Table 4.** Interaction between Individual and Neighborhood Economic Conditions on Young Adult Negative Self-Feelings (Young Adult Survey, G2, waves 1 & 3).

	T3 Negative Self-Feelings (NSF)		
	M1	M2	M3
<i>T1 Economic Context</i>			
Neighborhood economic problems <sup>a</sup>	-.70 **	-1.73 *	-2.05 **
Family economic problems	.04	.45 *	.01
Self-reported social class	-.04	-.17	-.19 †
<i>Interaction between Neighborhood Economic Context and ...</i>			
... Family economic problems	.89 *		.95 *
... Self-reported social class		.29 †	.32 †
<i>T1 Control Variables</i>			
Female	.54 ***	.53 **	.53 **
Black	-.48 *	-.51 **	-.48 *
Hispanic	-.43 †	-.45 †	-.46 †
Parents' years of education	-.05	-.04	-.04
Crime in neighborhood	.12 †	.14 †	.13 †
Negative self-feelings	.22 ***	.22 ***	.22 ***
Constant	2.89 ***	3.27 ***	3.47 ***
F-statistic (d.f.)	11.27 *** (10)	11.11 *** (10)	10.60 *** (11)
Change in F-statistic (d.f.) <sup>b</sup>	4.50 * (1)	3.04 † (1)	4.50 * (1)
Change in F-statistic (d.f.) <sup>b</sup>			3.62 † (1)
R-square	.09	.09	.10
Valid N	1,090	1,090	1,090

<sup>a</sup> Dichotomy, 1 = one or more economic problems perceived.

<sup>b</sup> Change in model fit calculated for the inclusion of the interaction effect.

\*\*\* p<.001; \*\* p<.01; \* p<.05; † p<.10 (two-sided test)

**Table 5.** Predicted Negative Self-Feelings in Young Adulthood Based on the Combination of Neighborhood and Individual Level Economic Disadvantage (based on the interaction effects in model 3, Table 4).

		Economic problems in neighborhood	
		Zero	One or more
Family economic problems <sup>a</sup>	No	3.58	<b>2.80</b>
	Yes	3.59	3.77
Social Class <sup>b</sup>	Upper	3.20	3.07
	Lower	<b>4.14</b>	2.41

Note: Bold font indicates that the prediction is significantly different from predictions from other combinations of individual and neighborhood disadvantage.

<sup>a</sup> Holding social class at middle class (value 4).

<sup>b</sup> Holding family economic problems at zero.

## References:

- Agnew, Robert and Helene Raskin White. 1992. "An Empirical Test of General Strain Theory." *Criminology* 30:475-500.
- Aneshensel, Carol S. and Clea A. Sucoff. 1996. "The Neighborhood Context of Adolescent Mental Health." *Journal of Health and Social Behavior* 37:293-310.
- Baldwin, Robert C. and John O'Brien. 2002. "Vascular Basis of Late-Onset Depressive Disorder." *The British Journal of Psychiatry* 180:157.
- Baum, Andrew, J. P. Garofalo, and Ann M. Yali. 1999. "Socioeconomic Status and Chronic Stress: Does Stress Account for Ses Effects on Health?" *Annals of the New York Academy of Sciences* 896:131.
- Boardman, Jason D., Brian Karl Finch, Christopher G. Ellison, David R. Williams, and James S. Jackson. 2001. "Neighborhood Disadvantage, Stress, and Drug Use among Adults." *Journal of Health and Social Behavior* 42:151-165.
- Cutrona, Carolyn E., Daniel W. Russell, Robert M. Hessling, P. Adama Brown, and Velma Murry. 2000. "Direct and Moderating Effects of Community Context on the Psychological Well-Being of African American Women." *Journal of Personality and Social Psychology* 79:1088-1101.
- Gottheil, Edward, Keith A. Druley, Steven Pashko, and Stephen P. Weinstein. 1987. "Stress and Addiction."
- Hadley-Ives, Eric, Arlene Rubin Stiffman, Diane Elze, Sharon D. Johnson, and Peter Dore. 2000. "Measuring Neighborhood and School Environments: Perceptual and Aggregate Approaches." *Journal of Human Behavior in the Social Environment* 3:1-28.
- Jiang, Wei, R. K. Krishnan, Krishnan, and Christopher M. O'Connor. 2002. "Depression and Heart Disease: Evidence of a Link, and Its Therapeutic Implications." *CNS Drugs* 16:111-127.
- Kaplan, Howard B. 1976. "Self-Attitudes and Deviant Response." *Social Forces* 54:788-801.
- Kaplan, Howard B. and Cheng-Hsien Lin. 2005. "Deviant Identity, Negative Self-Feelings, and Decreases in Deviant Behavior: The Moderating Influence of Conventional Social Bonding." *Psychology Crime & Law* 11:289-303.
- Kaplan, Howard B. and Zeng-yin Lin. 2000. "Deviant Identity as a Moderator of the Relation between Negative Self-Feelings and Deviant Behavior." *The Journal of Early Adolescence* 20:150.
- Latkin, Carl A. and Aaron D. Curry. 2003. "Stressful Neighborhoods and Depression: A Prospective Study of the Impact of Neighborhood Disorder." *Journal of Health and Social Behavior* 44:34-44.
- Leventhal, Tama and Jeanne Brooks-Gunn. 2003. "Moving to Opportunity: An Experimental Study of Neighborhood Effects on Mental Health." *Am J Public Health* 93:1576-1582.
- MacMahon, Kenneth M. A. and Y. H. Gregory. 2002. "Psychological Factors in Heart Failure: A Review of the Literature." *Archives of Internal Medicine* 162:509.
- Maddock, Clementine and Carmine M. Pariante. 2001. "How Does Stress Affect You? An Overview of Stress, Immunity, Depression and Disease." *Epidemiol Psychiatr Soc* 10:153-162.

- Muthen, Linda K. and Bengt O. Muthen. 2007. "Mplus Users Guide Fifth Edition." *Los Angeles, CA, Muthen and Muthen.*
- Rios, Dean A., Dorina R. Abdulah, Jeanne Y. Wei, and Jeffrey M. Hausdorff. 2001. "Disparate Effects of Socioeconomic Status on Physical Function and Emotional Well-Being in Older Adults." *Aging (Milano)* 13:30-7.
- Robert, Stephanie A. 1998. "Community-Level Socioeconomic Status Effects on Adult Health." *Journal of Health and Social Behavior* 39:18-37.
- Ross, Catherine E. 2000. "Neighborhood Disadvantage and Adult Depression." *Journal of Health and Social Behavior* 41:177-187.
- Ross, Catherine E. and Sung J. Jang. 2000. "Neighborhood Disorder, Fear, and Mistrust: The Buffering Role of Social Ties with Neighbors." *American Journal of Community Psychology* 28:401-420.
- Ross, Catherine E. and John Mirowsky. 2001. "Neighborhood Disadvantage, Disorder, and Health." *Journal of Health and Social Behavior* 42:258-276.
- Sampson, Robert J., Jeffrey D. Morenoff, and Thomas Gannon-Rowley. 2002. "Assessing "Neighborhood Effects": Social Processes and New Directions in Research." *Annual Review of Sociology* 28:443-478.
- Schulz, Amy, David Williams, Barbara Israel, Adam Becker, Edith Parker, Sherman A. James, and James Jackson. 2000. "Unfair Treatment, Neighborhood Effects, and Mental Health in the Detroit Metropolitan Area." *Journal of Health and Social Behavior* 41:314-332.
- Shaw, Clifford R. and Henry D. McKay. 1942. *Juvenile Delinquency and Urban Areas.* Chicago: University of Chicago Press.
- Stiffman, Arlene R., Eric Hadley-Ives, D. Elze, Sharon Johnson, and Peter Dore. 1999. "Impact of Environment on Adolescent Mental Health and Behavior: Structural Equation Modeling." *American Journal of Orthopsychiatry* 69:73-86.
- Turner, R. Jay, Donald A. Lloyd, and Patricia Roszell. 1999. "Personal Resources and the Social Distribution of Depression." *American Journal of Community Psychology* 27:643-672.
- Wheaton, Blair and Philippa Clarke. 2003. "Space Meets Time: Integrating Temporal and Contextual Influences on Mental Health in Early Adulthood." *American Sociological Review* 68:680-706.
- Wilson, William J. 1996. *When Work Disappears: The World of the New Urban Poor.* New York: Knopf Press.