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Original article

Neighborhood Environment and Body Mass Index Trajectories From Adolescence to Adulthood

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See Editorial p. 3

A B S T R A C T

Objectives: To investigate whether neighborhood conditions during adolescence are associated with body mass index (BMI) extending into young adulthood.
Methods: Latent growth curve modeling was used to examine BMI over three waves (1996, 2001, and 2008) of the National Longitudinal Study of Adolescent Health (n = 9,115).
Results: Parental perceptions of neighborhood disorder and neighborhood structural disadvantage were positively associated with BMI at baseline. Although parental perceptions of disorder were not associated with the rate of change in BMI over time, neighborhood structural disadvantage was positively associated with the slope of BMI. Adolescents who lived in more disadvantaged neighborhoods not only had higher BMI at the beginning of the study, but they also gained weight at a faster rate than those who lived in more advantaged neighborhoods at the first wave of data collection. The data also revealed notable gender, racial, and ethnic subgroup variations in the relationship between neighborhood context and BMI.
Conclusion: The neighborhood environment during the critical period of adolescence appears to have a long-term effect on BMI in adulthood. Policy interventions focusing on the neighborhood environment may have far-reaching effects on adult health.

High body mass among children and adolescents has received widespread attention from policymakers, including a national campaign headed by First Lady Michelle Obama which is aimed at solving the obesity epidemic within a generation (http://www.letsmove.gov). National prevalence data show that approximately 17% of children and adolescents have a body mass index (BMI) above the 95th percentile of the United States age and sex-specific reference [1,2]. Obesity in early life is of critical importance, partly because of its association with adult obesity and subsequent health problems. Given that obesity may persist throughout the life course, researchers emphasize the importance of understanding growth trajectories when developing prevention strategies to counter risk factors for obesity at young ages [1,3]. Neighborhood context is one important feature of an obesogenic environment; however, few researchers have examined the influence of the adolescent neighborhood on body mass in young adulthood. This oversight is notable given recent work identifying adolescence as a potentially significant stage in the life course for vulnerability to obesity [1,3,4].

Why might neighborhood conditions during adolescence influence body mass later in life? Researchers note that residents of disadvantaged neighborhoods live within "systems of obesity" that are defined by a collection of factors that encourage risky eating habits and discourage regular physical activity [5–10]. Those who live in disadvantaged environments may also face a psychosocial context that encourages obesity [11–13]. Daily ex-

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posure to threatening conditions in one's neighborhood may induce a two-stage stress response. The initial stage releases adrenaline into the bloodstream. To supply the body with a ready source of energy to fight or flee, adrenaline triggers the release of glucose from energy stores and prompts the break down and release of fatty acids from fat reserves. The follow-up stage of the stress response activates the hypothalamic-pituitary-adrenal axis and releases cortisol into the circulating blood. In an effort to replenish energy reserves depleted during the initial stage, cortisol converts food into stored fats and acts on the brain to induce hunger. Psychological distress exacerbates these metabolic processes by elevating cortisol levels throughout the day. When cortisol levels are chronically high, excessive amounts of energy are stored as fat around the abdomen, which increases the risk of central obesity [14–16].

Negative parental perceptions of the neighborhood environment may also hinder adolescents' physical activity patterns outside of the home. Parents who perceive their neighborhood as disordered may restrict the time that their children spend outside, leading to higher levels of participation in sedentary leisure activities [17,18]. Indeed, research suggests that parental perceptions of neighborhood safety are associated with lower rates of childhood obesity [19–21]. Parents who perceive their neighborhood as dangerous may also be more likely to restrict positive opportunities, such as participation in afterschool programs that require returning home late in the evening [22].

If neighborhood conditions during adolescence influence body mass, could this association vary by race, ethnicity, and gender? A small body of research suggests that it does [8,12,23,24]. Specifically, previous research suggests that a disordered neighborhood environment may be particularly noxious for women [23]. Racial and ethnic variations in the relationship between neighborhood context and BMI are less clear. Although neighborhood disadvantage may help explain racial disparities in body mass [8], there is little evidence suggesting that living in a disadvantaged environment is more detrimental to racial and ethnic minorities. In fact, previous work indicates that neighborhood characteristics are most consistently associated with BMI among whites [24].

Although previous research has made significant contributions to our understanding of the connection between neighborhood context and body mass, additional work is needed to address several important issues. First, previous studies tend to rely on one or two measures of neighborhood context, namely census measures tapping neighborhood disadvantage [19]. Varying measures of neighborhood conditions may assess interrelated but distinct aspects of the living environment. Census measures of neighborhood disadvantage often indicate restricted access to community resources, services, and opportunities, including, for example, healthy food options, amenities for exercise, and health-related information [19,25,26]. However, previous research suggests that neighborhood disadvantage may not directly impair health, but instead may predispose neighborhoods to noxious conditions [27]. There is likely notable variation in social control within disadvantaged environments. Thus, respondent perceptions of the neighborhood environment are important indicators of a psychosocial context that may encourage obesity [11]. Second, because most studies use cross-sectional data, temporal sequencing is uncertain [10,19,28]. Finally, it is unclear whether neighborhood conditions affect body mass trajectories, and how initial disparities may increase or decrease over the life course.

Using data from the National Longitudinal Study of Adolescent Health (Add Health), we investigate the influence of neighborhood conditions during adolescence on body mass trajectories into young adulthood. Based on the arguments presented thus far, we developed the following hypotheses to guide subsequent analyses:

1. Living in neighborhoods with higher levels of neighborhood disadvantage and disorder will be associated with greater BMI at baseline and faster increases in BMI over the study period.
2. The association between neighborhood context and BMI will be stronger for females than for males.
3. The association between neighborhood context and BMI will be stronger for whites than for Latinos and African Americans.

Methods

Data

Add Health is a large, school-based study of adolescents, their families, and their schools. The Add Health sample is representative of schools in the United States with respect to geographic region of the country, urbanicity, school type, ethnicity, and school size. The current study uses data from the wave 1–wave 4 in-home interviews, the parent questionnaire, and the wave 2 contextual database, which includes information on the characteristics of respondents' communities.

The wave 1 in-home interviews were conducted between April and December of 1995 and consisted of 20,745 respondents in grades 7–12 (response rate: 78.9%). Nearly 18,000 parents, the majority of whom were mothers, completed the parent questionnaire at wave 1. All adolescents who participated in the first wave of data collection, except those who were in twelfth grade

Table 1
Descriptive statistics for all study variables (n = 9,115)

	Mean (SD)	Proportion
Individual and family characteristics		
Female	–	.54
Race/ethnicity		
White	–	.54
Black	–	.21
Latina/o	–	.15
Other	–	.09
Age (in years)	15.38 (1.52)	–
Parent education		
<High school	–	.12
High school	–	.29
>High school	–	.58
Household income (in thousands)	46.84 (47.08)	–
Public assistance	–	.09
Nonintact family structure	–	.40
Neighborhood measures		
Size (contextual database)	1,709.77 (1,452.86)	–
Disorder (parent questionnaire)	2.99 (.99)	–
Feels safe (in-home survey)	–	.89
Disadvantage (contextual database)	−.04 (3.53)	–
Body mass index (BMI)		
Wave 2 BMI	–	23.12 (4.78)
Wave 3 BMI	–	26.71 (6.41)
Wave 4 BMI	–	29.14 (7.64)

at wave 1, were eligible to participate in the wave 2 in-home interviews. These interviews were conducted between April and August of 1996 and consisted of 14,738 respondents (response rate: 88.2%). More than 15,000 original wave 1 respondents were re-interviewed between August 2001 and April 2002 for the third wave (response rate: 77.4%) and between January 2008 and February 2009 for the fourth wave of the study (response rate: 80.3%). Respondents were 18–26-years-old at wave 3 and 24–32-years-old at wave 4.

To control for the oversampling of some groups in the Add Health study, the analytical sample only includes respondents with valid sampling weights (n = 9,421). We also exclude respondents who were <13 years of age at wave 2 (final n = 9,115). By age 13, the cutoffs used to identify overweight and obese adolescents are comparable with those used to identify overweight and obese adults (i.e., BMI: 25–29.9 for overweight and BMI: ≥30 for obese).

Measures

Body mass index. Weight is measured as a continuous variable, ranging from low to high levels. Degree of overweight is indicated by BMI, the ratio of weight to height squared ($[kg/cm^2] \times 10^4$). BMI at waves 2–4 is based on weight and height measurements obtained by trained interviewers. BMI at wave 1 is based on self-reported weight and height. Given the potential for bias in self-reported measures, we decided to analyze BMI trajectories using data from waves 2–4 only.

Parental perceptions of neighborhood disorder. Perceptions of neighborhood disorder are assessed in the parent questionnaire. Parents were asked to rate the significance of problems in the neighborhood, including trash on the sidewalks and drug dealers/users. Responses include no problem at all (1), a small problem (2), and a big problem (3). Responses to the last two items are summed to create a measure of neighborhood disorder (α = .62).

Perceptions of safety. In the wave 2 in-home interview, adolescent respondents were asked to report whether they usually felt safe in their neighborhood (1 = yes, 0 = no).

Neighborhood disadvantage. Based on previous research with the Add Health data [29], we constructed a measure of structural neighborhood disadvantage by standardizing and summing the following items from the 1990 U.S. Census (census tract): proportion of female-headed households with children aged <18 years, unemployment rate, proportion of house-

Table 2
Regression of the initial level and rate of change in BMI on Wave 1 neighborhood measures

	Full Sample (n = 9115)		Black Females (n = 1130)		Latina Females (n = 739)		White Females (n = 2670)	
	Intercept	Slope	Intercept	Slope	Intercept	Slope	Intercept	Slope
Individual and Family Characteristics								
Female	−.31*	.04**	–	–	–	–	–	–
	(.14)	(.01)	–	–	–	–	–	–
Race/ethnicity (White)			–	–	–	–	–	–
Black	.59+	.03	–	–	–	–	–	–
	(.32)	(.02)	–	–	–	–	–	–
Latina/o	.33+	.02	–	–	–	–	–	–
	(.20)	(.02)	–	–	–	–	–	–
Other	−.36	−.03	–	–	–	–	–	–
	(.37)	(.03)	–	–	–	–	–	–
Age (in years)	.47***	−.02***	.59***	−.02+	.20	.02	.45***	−.01
	(.05)	(.00)	(.15)	(.01)	(.19)	(.02)	(.08)	(.01)
Parent education (> High school)								
< High school	.27	.02	1.06+	−.00	1.10	−.02	1.01+	.02
	(.24)	(.03)	(.60)	(.06)	(.76)	(.07)	(.56)	(.05)
High school	.49**	.03*	−.52	.04	.56	.05	.81**	.04
	(.16)	(.02)	(.51)	(.04)	(.62)	(.06)	(.28)	(.03)
Household income	−.01**	−.00***	−.01	−.00*	−.00	.00	−.00	−.00*
	(.00)	(.00)	(.01)	(.00)	(.00)	(.00)	(.00)	(.00)
Public assistance	.54+	−.02	.46	−.05	.08	−.04	.50	−.03
	(.29)	(.03)	(.75)	(.07)	(1.12)	(.08)	(.54)	(.05)
Non-Intact family structure	−.29*	−.02	−.68	−.07	−.22	.03	−.16	−.02
	(.14)	(.01)	(.47)	(.05)	(.59)	(.06)	(.22)	(.02)
Neighborhood Measures								
Size (contextual database)	.00	.00	.00	.00*	.00	.00	.00	.00
	(.00)	(.00)	(.00)	(.00)	(.00)	(.00)	(.00)	(.00)
Neighborhood Disorder (parent survey)	.20**	−.00	.32	.01	.42	−.00	.05	.00
	(.07)	(.01)	(.26)	(.02)	(.27)	(.03)	(.13)	(.01)
Feels safe (in-home survey)	−.22	−.03	.53	−.02	−.15	−.04	−.27	−.07
	(.26)	(.03)	(.52)	(.06)	(.79)	(.09)	(.41)	(.05)
Disadvantage (contextual database)	.08*	.01*	−.01	.00	.16	.01	.10+	.01*
	(.03)	(.00)	(.06)	(.01)	(.12)	(.01)	(.06)	(.00)
R^2	.05	.02	.05	.02	.05	.01	.04	.02
χ^2/df	441.91/17***		31.79/11***		64.07/13***		286.82/13***	
Comparative Fit Index (CFI)	.95		.98		.91		.91	
Root Mean Square Error of Approximation (RMSEA)	.04		.04		.07		.09	

Note: *$p < .05$. **$p < .01$. ***$p < .001$. *Standard errors are in parentheses.*

holds receiving public assistance, proportion of nonelderly residents with income below the poverty line, and proportion of African Americans ($\alpha = .79$).

Background characteristics. The models include several control variables that are constructed from items in the wave 1 in-home interview, including child's gender (1 = female, 0 = male), race/ethnicity (dummy variables for black, Hispanic, and other, with white as the reference category), age (in years), level of education for the respondent's most highly educated parent (dummy variables for less than high school and high school, with more than high school as the reference category), and family structure (1 = nonintact, 0 = intact). All analyses include controls for household income (in thousands of dollars) and receipt of public assistance (1 = receives Aid to Families with Dependent Children; 0 = does not receive public assistance), which are constructed from items in the parent questionnaire, as well as neighborhood size (number of persons residing in the respondent's census tract), which is available in the wave 2 contextual database. Descriptive statistics are presented in Table 1.

Plan of analysis

Latent growth curve analysis is a specific type of random coefficient model that is well suited for the study of individual differences in development and change over time. Based on the structural equation modeling framework, latent growth curve analysis uses repeated measures of a construct to estimate a single underlying growth trajectory. The trajectory is characterized by two unobserved latent factors, known as the intercept (or starting point) and the slope (or rate of change over time) [29].

The first step in this analysis is to describe the average trajectory of BMI across the transition from adolescence to young adulthood. This is accomplished by using measures at three time points (1996, 2001, and 2008) to estimate an unconditional growth model for BMI. The factor loadings for the three time-specific measures of BMI are set to 1 to represent the starting point of the BMI trajectory in year 1. The factor loadings for the slope of the BMI trajectory are set to 0, 5, and 12 to define the rate of change as linear. The mean of the latent intercept factor provides the group average on the starting point for BMI, whereas the mean of the latent slope factor represents the average rate of change. Variances for the two latent growth factors describe individual variation around the overall means for the intercept and slope of BMI [30].

The next step in this analysis is to determine whether neighborhood context at wave 2 is associated with the initial level and rate of change in BMI, net of controls for other relevant characteristics. This is accomplished by regressing

Table 2
continued

	Black Males (n = 773)		Latino Males (n = 665)		White Males (n = 2293)	
	Intercept	Slope	Intercept	Slope	Intercept	Slope
Individual and Family Characteristics						
Female	–	–	–	–	–	–
	–	–	–	–	–	–
Race/ethnicity (White)	–	–	–	–	–	–
Black	–	–	–	–	–	–
	–	–	–	–	–	–
Latina/o	–	–	–	–	–	–
	–	–	–	–	–	–
Other	–	–	–	–	–	–
	–	–	–	–	–	–
Age (in years)	.40**	−.03**	.32*	−.02+	.54***	−.03***
	(.14)	(.01)	(.16)	(.01)	(.08)	(.01)
Parent education (> High school)						
< High school	−.88	−.19**	−.59	.08	−.42	.07
	(.90)	(.07)	(.64)	(.05)	(.53)	(.06)
High school	.49	−.12*	.67	.02	.39	.05+
	(.65)	(.05)	(.79)	(.05)	(.26)	(.03)
Household income	−.00	−.00*	−.01***	.00+	−.00+	.00**
	(.01)	(.00)	(.00)	(.00)	(.00)	(.00)
Public assistance	−.04	.04	.36	−.01	.97	−.04
	(.82)	(.05)	(.75)	(.08)	(.65)	(.07)
Non-Intact family structure	−.01	−.04	−.74	−.00	−.36	.00
	(.54)	(.05)	(.65)	(.06)	(.24)	(.03)
Neighborhood Measures						
Size (contextual database)	.00*	.00	.00	.00	.00	.00
	(.00)	(.00)	(.00)	(.00)	(.00)	(.00)
Neighborhood Disorder (parent survey)	.26	−.04*	.18	−.03	.17	.01
	(.27)	(.02)	(.32)	(.02)	(.13)	(.01)
Feels safe (in-home survey)	.06	.02	−1.43*	.01	−.58	−.02
	(.69)	(.06)	(.65)	(.09)	(.53)	(.06)
Disadvantage (contextual database)	−.12	.00	.05	−.00	.17***	−.00
	(.08)	(.00)	(.08)	(.02)	(.05)	(.00)
R^2	.03	.06	.05	.03	.06	.03
χ^2/df	26.11/12*		32.71/12**		115.59/11***	
Comparative Fit Index (CFI)	.98		.96		.95	
Root Mean Square Error of Approximation (RMSEA)	.04		.05		.06	

the intercept and slope of BMI on each neighborhood measure, along with other important background variables. To examine potential subgroup variation in the association between neighborhood characteristics and trajectories of BMI, we also run the model separately for six race/sex groups, including black females, Latina females, white females, black males, Latino males, and white males. All analyses are conducted in Mplus version 3.0, Muthen and Muthen, and correct for design effects and the unequal probability of selection in the Add Health data. We also use an option that allows the analysis of data containing missing values [31].

Results

Unconditional growth model

Overall, respondents experience an increase in BMI across the transition from adolescence to young adulthood (mean of intercept = 23.07, $p < .001$; mean of slope = .50, $p < .001$). The BMI trajectory is characterized by significant variation in both the starting point (variance of the intercept = 24.28, $p < .001$) and the rate of change (variance of the slope = .22, $p < .001$). Thus, the next step in this analysis is to determine whether neighborhood context is a source of this variation.

Growth model with predictors

The results presented in Table 2 are from a growth model in which the intercept and slope factors for BMI are regressed on parental perceptions of neighborhood disorder, adolescent perceptions of safety, and neighborhood disadvantage, along with other important background variables. As shown in Table 2, parental perceptions of neighborhood disorder and neighborhood structural disadvantage are positively associated with the intercept of BMI for the full sample. This indicates that adolescents who live in neighborhoods characterized by greater disorder and disadvantage begin the study period with higher BMI as compared with other adolescents. Although parental perceptions of disorder are not associated with the rate of change in BMI over time, neighborhood structural disadvantage is positively associated with the slope of BMI. Adolescents who live in more disadvantaged neighborhoods not only have higher BMI at the beginning of the study but also gain weight at a faster rate than those who lived in less disadvantaged neighborhoods at wave 2.

The subgroup analyses shown in Table 2 provide evidence of between-group variation in the association between neighborhood characteristics and BMI trajectories. Among girls, there is no association between neighborhood characteristics and initial level of BMI. For white girls, but not black or Latina girls, there is a positive association between structural disadvantage and the rate of change in BMI. This suggests that white girls who live in more disadvantaged neighborhoods gain weight at a faster rate than those who live in less disadvantaged neighborhoods. White boys who live in more disadvantaged neighborhoods have higher BMI at the beginning of the study period than other white boys; and Latino boys who feel safe in their neighborhoods start out with lower BMI than Latino boys who do not feel safe. For black boys, neighborhood characteristics are not associated with the intercept of BMI. Among black boys, neighborhood disorder is associated with a slower rate of increase in BMI over time. Neighborhood characteristics do not appear to be associated with the rate of change in BMI for white or Latino boys. Model fit indexes indicate that the model fits well for the full sample and for most subgroups. The generally accepted cutoff for comparative fit index (CFI) is .96 or higher, and the cutoff for root mean square error of approximation (RMSEA) is .06 or lower. A graphical depiction of the results for each group by initial structural disadvantage can be seen in Figures 1 and 2.

Discussion

Building on previous research, we used data from the Add Health Study to examine the net effects of objective and subjective indicators of neighborhood conditions on BMI trajectories. Our findings reveal several noteworthy patterns.

First, consistent with hypothesis 1, teens residing in neighborhoods characterized by structural disadvantage have greater body mass at the beginning of the study and gain body mass at a faster rate over the study period than their counterparts from more advantaged neighborhoods. This finding is consistent with numerous previous studies noting the association between disadvantaged neighborhood and obesity [5,10,19,32,33]. Our results are also consistent with cumulative disadvantage theory, which asserts that individuals who lack protective resources, including economic assets and health-related knowledge, are at an increasing risk of negative health outcomes over time [34,35]. Although initial neighborhood variation in weight may seem trivial during the teen years, these inequalities grow into notable weight differences by early adulthood. This finding suggests that interventions focused on children and teens from disadvantaged neighborhoods are particularly important for reducing adult disparities in negative health outcomes associated with obesity.

Second, also consistent with hypothesis 1, as well as previous research in this area [17], parental perceptions of neighborhood disorder are associated with higher initial levels of adolescent BMI. This suggests that adolescents with parents who perceive their environment as unclean and unsafe are more likely to begin the study period with a higher average body mass than adolescents with parents who perceive their neighborhood as less noxious. However, in contrast with hypothesis 1, perceptions of neighborhood disorder appear to be unrelated to the rate of increase in body mass over time. This suggests that parental attitudes may play a particularly important role in determining adolescent weight, perhaps through restricting time spent outside of the home. Parents likely have less control over their children's behavior as they move into young adulthood, leading to the diminished influence of parental attitudes on BMI over time.

Third, several subgroup variations merit discussion. In partial support of hypothesis 2, the association between neighborhood disadvantage and increases in body mass appears to be stronger among white females as compared with their white male counterparts. However, in contrast with hypothesis 2, the association between neighborhood disadvantage and initial levels of BMI appears to be stronger among white males than among their white female counterparts. Also in direct contradiction to hypothesis 2, perceptions of neighborhood safety seem to be particularly important for the BMI of Latino males, but less so for their Latina female counterparts.

Perhaps more striking are racial and ethnic variations in the relationship between neighborhood context and BMI. Consistent with hypothesis 3, the deleterious effect of neighborhood disadvantage seems to be most pronounced among whites as com-

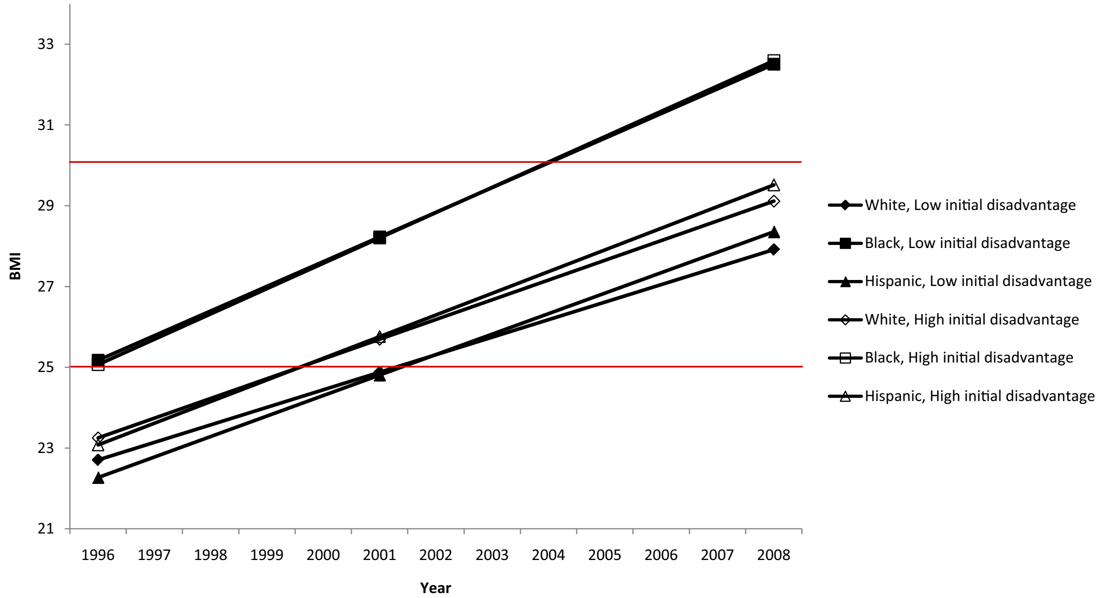

Figure 1. Predicted trajectories of body mass index by initial neighborhood disadvantage and race/ethnicity, females only (n = 4,539). For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.

pared with blacks and Latinos. This finding is consistent with recent work suggesting that community disadvantage may be particularly detrimental for the health of whites as compared with racial and ethnic minorities [36].

Although not the focus of the current study, our main effects for race and ethnicity also merit a brief discussion. Before adding controls for neighborhood conditions, our analysis revealed notable race and ethnic variations in the rate of increase in body mass over time (not shown but available on request). Both Latino (b = .03, $p < .05$) and African American respondents (b = .06, $p < .05$) gained weight at a faster rate than their white counterparts. The addition of controls for neighborhood context reduced these disparities to nonsignificance, indicating that at least part of the reason that racial and ethnic minorities gain weight at a faster rate than their white counterparts is a result of being located in disadvantaged environments. This finding is consistent with other work in this area, which shows that neighborhood disadvantage mar-

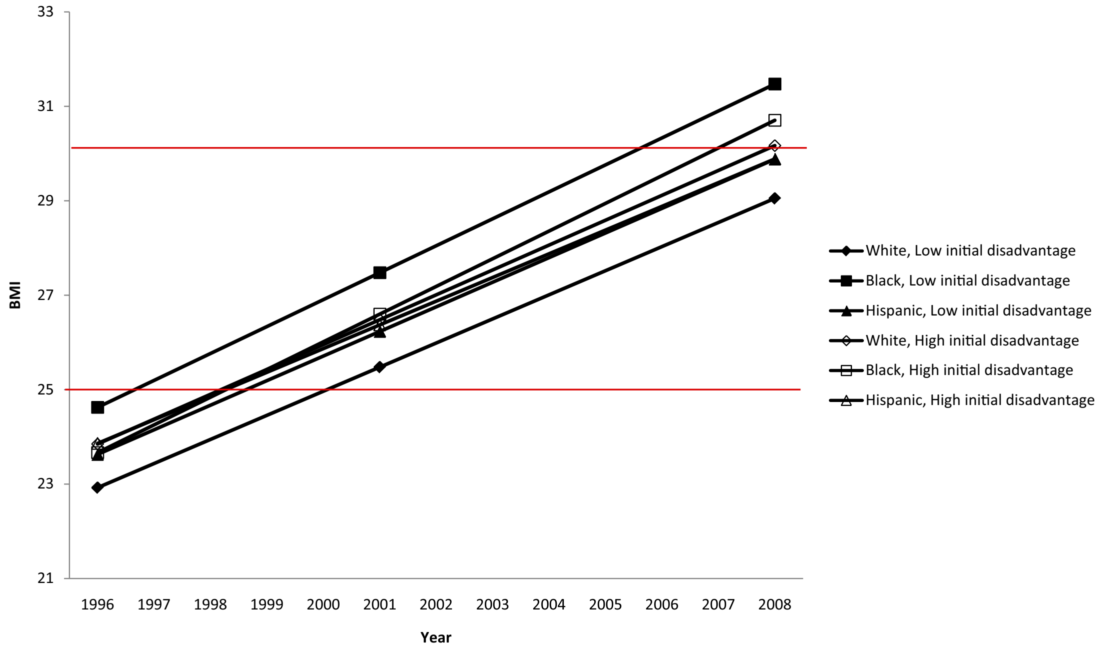

Figure 2. Predicted trajectories of body mass index by initial neighborhood disadvantage and race/ethnicity, males only (n = 4,110). For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.

ginally reduces racial disparities in BMI among black and white women [8].

There are several limitations to the current study. First, our findings cover an important, but limited, stage of the life course. Although our study design is an improvement over many studies in this area, it is unclear whether our results for early adulthood extend into middle age. Second, although the present study accounts for several important aspects of the neighborhood environment, our measure of parental perceptions of neighborhood disorder is limited to two items. In addition, the data do not include similar items capturing adolescent perceptions of neighborhood disorder. Thus, we are limited to adolescent perceptions of neighborhood safety. Although perceptions of neighborhood safety are a key component of perceived neighborhood conditions, previous work on neighborhoods and health has provided a much more comprehensive measure [27]. Our more simplistic measures of neighborhood perceptions are less reliable than those used in previous work, resulting in conservative estimates and limiting our ability to compare our findings with previous research. Third, although these items capture key dimensions of neighborhood disorder, they do not provide a full explanation for why parental or individual neighborhood perceptions affect BMI. Future research should explore mechanisms linking perceived neighborhood conditions with body mass. Fourth, our current measures may capture additional respondent characteristics not included in our models, such as mental health problems, rather than solely assessing perceptions of the neighborhood.

Finally, we must acknowledge the limited predictive value of our model. Our R^2 values in the full model are low, 5% in our prediction of the intercept and 2% in our prediction of the slope. These low values indicate the importance of proximal risk factors for body mass, such as diet and exercise, which may also serve as mediators of the neighborhood-BMI relationship in more elaborate theoretical models. Similarly, our neighborhood effect sizes are quite modest. For example, white females at high levels of neighborhood disadvantage (one standard deviation above the mean) are a little over one unit apart on BMI in comparison with white females at low levels of disadvantage (one standard deviation below the mean) in the final wave of our data. However, given that those women in the high category of neighborhood disadvantage are dangerously close to the obese category of BMI, these differences in weight are still of concern, particularly if neighborhood disparities extend into middle age when obesity-related health problems are more prevalent.

Despite these limitations, our study has made an original contribution to the research literature by examining the influence of multiple indicators of neighborhood context on BMI trajectories extending into adulthood. Our findings highlight the need to account for neighborhood-level variations in body mass, over and above individual characteristics. As previous researchers have suggested, interventions focusing on neighborhood environment may offer more “upstream” preventive strategies with the potential to influence large portions of the population [19]. Our results suggest that policy initiatives focusing on improving institutional resources in disadvantaged areas may have far-reaching effects on adult health.

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