As the prevalence of obesity and overweight rises in the United States, researchers continue to investigate a range of mechanisms by which people attain excessive body weight. Agreement is growing that the source of the obesity epidemic lies in an environment that produces an energy gap, where energy intake exceeds energy expenditure even by as little as 100 excess calories per day. Yet, it is unclear whether this 100-calorie excess is a function of increased intake or decreased output or some combination of both in American activity and consumption behaviors over time.

Limited data exist on trends in energy intake and energy expenditure among Americans over the past 3 decades, but the data that are available are nonetheless consistent with the rise in obesity observed over the same period. Between 1977 and 1996, Americans increased their total energy consumption by about 200 kcal/day. This was largely a result of increased consumption of snacks and soft drinks, particularly among young adults, while vegetable and fruit consumption remained low. These consumption behaviors have all been linked to excess weight gain. The increased availability of inexpensive, energy-dense food and beverages coupled with a lack of access to fresh fruits and vegetables are some of the environmental factors that may contribute to these trends. The US population has also adopted an increasingly sedentary lifestyle in an environment that is associated with a reduction in energy expenditure, including car-dependent neighborhoods that discourage walking and biking and limited physical activity in schools. On average, American youth spend over 30 hours per week watching television, which is positively associated with being overweight, either through sedentary activity or through exposure to the marketing of poor-quality foods. Modern lifestyles are increasingly characterized by skipping breakfast and sleeping less, which have also been linked to energy imbalance.

These reported trends in health behaviors, however, are based on data from repeated cross-sectional surveys that were often conducted up to 5 years or more apart, the results of which are typically reported in aggregate across a time span of 4 to 7 years. Moreover, published articles frequently focus on trends in only 1 health behavior (e.g., fruit and vegetable consumption) and not the relative practice of energy consumption and expenditure behaviors among individuals over time. As a result, more detailed trends in health behaviors, particularly as they illustrate subtle changes in the balance of energy intake and output occurring annually among American youth adults over the last quarter century, are poorly understood.

Also, differences in these behaviors and their trends by gender, socioeconomic status (SES), and racial/ethnic background are not well described at a population level, even though well-documented health disparities in obesity by social position exist. Using data from the National Health and Nutrition Examination Survey (1988–2002), one study found that non-Hispanic Blacks, persons in poverty, and those with less than a high school education were less likely to meet US Department of Agriculture fruit and vegetable guidelines than were non-Hispanic Whites and socioeconomically advantaged individuals. However, these results were based on 2 cross-sectional data sets collected 5 years apart. Delva et al. used repeat cross-sectional data collected annually from secondary school students between 1986 and 2003 to report declining trends in the proportion of adolescents who ate breakfast or exercised regularly, with a lower prevalence among women, racial/ethnic minorities, and those with low SES.

Trends in the frequency of these behaviors beyond the secondary school setting, however, remain largely undocumented. The purpose of our study was, first, to investigate long-term patterns in weight-related...
States since 1976. We hypothesized that the frequency of weight-related health behaviors among young adults has changed in this early period of the adult life course, when many adult health behavior patterns show their formative roots. The transition to adulthood (sometimes referred to as emerging or early adulthood) is a period when individuals are on their own typically for the first time, when life plans are put into action, and when distinctive life paths become more manifest. We hypothesized that the frequency of healthy behaviors would generally decline among young adults over this period, and that the rate of decline would be greater among those in disadvantaged social positions (women, Blacks, Hispanics, and those of lower SES).

**METHODS**

Data were drawn from the Monitoring the Future project, a nationwide school-based survey of drug, alcohol, and tobacco use that has been conducted annually in the United States since 1976. The survey also monitors lifestyles and behaviors (including a limited range of health behaviors). The study design (described in more detail elsewhere) involves a nationally representative sample of high school seniors surveyed in the spring of each year (approximately 15,000 per year). A 16% representative subsample (approximately 2,400 students per year) is randomly selected from each cohort for 6 biennial follow-ups (to the age of 30 years) carried out with self-completed mailed questionnaires. Drug users (regular users of marijuana or any use of illicit drugs in the previous 30 days) were oversampled for the panel component by a ratio of 3 to 1 and were then reweighted in the analyses as discussed in more detail below.

**Study Population**

We focused on historical trends in early adult health behaviors in the years immediately following high school, when respondents were aged 19 to 26 years (the first 4 follow-ups in the Monitoring the Future panel). To keep the age range consistent each year, we basised our analyses on only the 23-year period (1984–2006) for which data were available for respondents aged 19 to 26 years (inclusive). To ease respondent burden in the Monitoring the Future panel study, multiple forms are used, with some questions appearing on only some of the forms. A random one sixth of respondents received a questionnaire that included items about eating habits, exercise, and sleeping habits; a random one sixth completed a questionnaire that included an item pertaining to sedentary behavior. Thus, the final sample available for analysis consisted of 17,314 young adults (9,631 women and 7,683 men) who were aged 19 to 26 years between 1984 and 2006; each young adult provided up to 4 questionnaires at 2-year intervals.

**Measures**

We examined historical trends in 6 health behaviors. Three questions were asked about eating habits: “How often do you eat breakfast?”; “How often do you eat at least some green vegetables?”; and “How often do you eat at least some fruit?” with a 6-level response scale (never, seldom, sometimes, most days, nearly every day, and every day) coded 1 to 6, respectively.

Respondents were asked 1 question about how often they exercised vigorously (jogging, swimming, calisthenics, or any other active sport), and responses were again scored on a 6-level response scale (never to every day). Respondents were asked 1 question about how often they get at least 7 hours of sleep (6-level response scale ranging from never to every day).

Respondents were asked 1 question about television viewing: “How much TV do you estimate you watch on an average weekday?” Responses were measured in hours, ranging from none (0 hours) to 5 or more hours per weekday.

Three variables captured key indicators of social position that have been found to be related to obesity and overweight: (1) gender, (2) race/ethnicity, and (3) SES. Gender was captured with a dummy variable coded 1 for women and 0 for men. Race/ethnicity was represented by 4 dummy variables in the analyses: White, Black, Hispanic, and other racial or ethnic group (including Asians and Native Americans). Because respondents were in various stages of educational attainment, we used an indicator of SES constructed from the parents’ education (maximum of the respondent’s parents’ education), which was dichotomized as less than a high school education or a high school degree and higher.

**Statistical Analyses**

Growth curve models were used to examine patterns of health behaviors in young adults over time. Growth curve models belong to a general class of mixed models that take into consideration the clustering of observations within persons and can handle unbalanced designs (inconsistent number of observations per person). Although the frequency of each health behavior was assessed on a 6-level ordinal scale, a linear mixed model was used (assuming an underlying normal distribution based on an examination of descriptive histograms and the shape of the residuals). A 2-level linear model was analyzed, with multiple observations nested within persons over time. To facilitate parameter interpretation, the intercept was centered at the earliest year (1984). The structure of this model can be expressed by equations at 2 levels. At level 1 (within-person model), exercise frequency, for example, at time $t$ is nested within individuals ($i$):

$$
\text{Exercise}_{it} = \pi_{0i} + \pi_{1i}(\text{year} - 1984)_{it} + e_{it},
$$

where $\pi_{0i}$ is the expected exercise frequency score for person $i$ in 1984 (because year is centered), $\pi_{1i}$ captures the rate of change in exercise frequency over the 23-year study period, and $e_{it}$ is the within-person residual.

The level-1 parameters were then modeled as a function of individual characteristics (at level 2). The level 2 (between-person) submodel assumed that health behavior trajectories vary across individuals, and we explicitly modeled these differences as follows:

$$
\pi_{0i} = \beta_{00} + \beta_{01}(\text{low SES})_{i} + \epsilon_{0i},
$$

and

$$
\pi_{1i} = \beta_{10} + \beta_{11}(\text{low SES})_{i} + \epsilon_{1i}.
$$

Here, for example, the intercept and time slope from equation 1 were modeled as a function of SES, where $\beta_{01}$ represents the
difference in the initial exercise frequency score in 1984 for someone from low SES compared with a person from higher SES, and $b_{12}$ captures the difference in the rate of change in exercise behavior over time for low SES compared with high SES persons. The residual errors ($e_{0i}, e_{li}$) capture random variance in the intercept and slope values across persons, which we attempted to capture through the incorporation of additional person-level variables (e.g., race or ethnicity).

The MIXED procedure in SAS version 9.2 (SAS Institute, Inc., Cary, NC) was used to estimate all models by using full maximum likelihood. Separate models were run for each of the 6 health behaviors, and each model was run separately for men and women to capture gender differences. By examining young adults over a narrow age range (aged 19–26 years), the analyses focused on historical trends in health behaviors, not age differences in these behaviors. Specifically testing for age effects by use of dummy variables for younger (aged 19–22 years) and older (aged 23–26 years) subgroups yielded no statistically significant differences in intercept or slope coefficients.

Retention rates in the panel respondents were highest in the first follow-up after high school (averaging 70% of the original cohort), and fell to an average of 64% in the biennial follow-ups through to age 26. To account for nonrandom attrition in the analyses, the probability of participation at each wave was modeled by using logistic regression analysis (with backward elimination) according to a broad array of baseline sociodemographic and academic characteristics. Consistent with previous work, 6 variables consistently predicted participation at each follow-up: being female, being White, coming from a 2-parent family, enrollment in an academic or college prep program in high school, and higher average grades in high school were positively associated with participation, and living in the southern region of the US at baseline was negatively associated with participation at each wave. By deriving the predicted probability of participation from these 6 variables, each observation at each wave was weighted to account for attrition based on the inverse probability of participation. Observations were also weighted to adjust for the oversampling of drug users in the panel design.

**RESULTS**

Approximately 3 in 4 persons in the analytic sample were White, and about 1 in 10 had low parental educational attainment (Table 1). The base growth curve models (modeling the effects of time only) for each of the 6 health behaviors since 1984 are presented in a table available as a supplement to the online version of this article at http://www.ajph.org. Most behaviors followed a linear rate of change (although quadratic effects were found for the frequency of eating breakfast). Over this period, young adult men exercised more frequently than did young adult women, but there was a significant decline in the frequency of exercise among men since 1984. The frequency of eating fruit and vegetables remained relatively stable among young adult women but declined significantly among young men since 1984. Among both young adult men and women, the frequency of getting at least 7 hours of sleep each night declined steadily over this 23-year period. Despite the focus on television as an important determinant for obesity, television

### TABLE 1—Descriptive Statistics for Young Adults Aged 19–26 Years, by Gender: Monitoring the Future Study, 1984–2006

<table>
<thead>
<tr>
<th></th>
<th>Women (n = 9631)</th>
<th></th>
<th>Men (n = 7683)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>Weighted % or Mean (SD)</td>
<td>No.</td>
<td>Weighted % or Mean (SD)</td>
</tr>
<tr>
<td><strong>Sociodemographic characteristics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>7482</td>
<td>73.74</td>
<td>6173</td>
<td>75.65</td>
</tr>
<tr>
<td>Non-Hispanic Black</td>
<td>906</td>
<td>12.20</td>
<td>547</td>
<td>9.97</td>
</tr>
<tr>
<td>Hispanic</td>
<td>562</td>
<td>7.00</td>
<td>409</td>
<td>6.80</td>
</tr>
<tr>
<td>Other race/ethnicity</td>
<td>575</td>
<td>7.06</td>
<td>472</td>
<td>7.59</td>
</tr>
<tr>
<td>Low SES*</td>
<td>914</td>
<td>10.92</td>
<td>567</td>
<td>8.85</td>
</tr>
<tr>
<td><strong>Academic profile at baseline</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enrollment in academic/college prep program</td>
<td>5222</td>
<td>52.06</td>
<td>3918</td>
<td>48.06</td>
</tr>
<tr>
<td>Average grade in high school</td>
<td>9469</td>
<td>85.36 (8.08)</td>
<td>7466</td>
<td>83.24 (8.98)</td>
</tr>
<tr>
<td><strong>Region of residence at baseline</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>South</td>
<td>3065</td>
<td>33.71</td>
<td>2372</td>
<td>33.25</td>
</tr>
<tr>
<td>Northeast</td>
<td>2101</td>
<td>21.03</td>
<td>1640</td>
<td>20.44</td>
</tr>
<tr>
<td>North Central</td>
<td>2815</td>
<td>28.18</td>
<td>2287</td>
<td>28.38</td>
</tr>
<tr>
<td>West</td>
<td>1650</td>
<td>17.08</td>
<td>1384</td>
<td>17.92</td>
</tr>
</tbody>
</table>

Note. SES = socioeconomic status.

*Parents had less than a high school education; high SES was defined as parents having a high school degree or higher.

**Baseline refers to senior year of high school.
viewing remained stable in the young adult population since 1984, at least in terms of weekday viewing. The frequency of eating breakfast increased in recent years among young adult men but decreased among young adult women. Breakfast increased in recent years among young adult women but decreased among young adult men.

Variations in the practice of healthy behaviors by social position were modeled by sequentially including the race/ethnicity and SES variables to the base growth curve models. The results indicated racial/ethnic differences in the frequency of eating breakfast among young adult women but decreased breakfast increased in recent years among young adult women but decreased. The frequency of eating breakfast remained stable in the young adult population since 1984, at least in terms of weekday viewing. The frequency of eating breakfast increased in recent years among young adult men but decreased among young adult women. Breakfast increased in recent years among young adult women but decreased among young adult men.

Although the frequency of exercise remained relatively stable among young adult women on average (model D in Table 2), adjustment for race/ethnicity indicated that this stability was observed only among non-Black women. Among Black women, the frequency of exercising declined steadily since 1984 (Figure 1b).

Although the results showed declines in the frequency of sleep among all young adults over this 23-year period (model E in Tables 2 and 3), both Black and Hispanic women showed significantly greater declines in the frequency of getting at least 7 hours of sleep each night than did White women. For men, dramatic declines in sleep were observed among young adults from lower SES after we adjusted for race/ethnicity. Figure 1 presents a visual illustration of the predicted trends in sleep by race/ethnicity (Figure 1c, for women) and SES (Figure 1d, for men) since 1984.

### Table 2—Growth Curve Models for Health Behaviors Among Young Adult Women Aged 19–26 Years, by Race/Ethnicity and Socioeconomic Status: Monitoring the Future Study, 1984–2006

<table>
<thead>
<tr>
<th>Model</th>
<th>Health Behavior</th>
<th>Intercept (in 1984)</th>
<th>Year</th>
<th>Year × Black</th>
<th>Year × Hispanic</th>
<th>Year × other race</th>
<th>Year × low SES</th>
<th>Year × low SES</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Eat Breakfast</td>
<td>3.546*** 3.521***</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Race, Coefficient</td>
<td>3.546***</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Race + SES, Coefficient</td>
<td>3.521***</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td>B</td>
<td>Eat Vegetables</td>
<td>4.108***</td>
<td>-0.067**</td>
<td>-0.067**</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Race, Coefficient</td>
<td>4.108***</td>
<td>-0.067**</td>
<td>-0.067**</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Race + SES, Coefficient</td>
<td>4.108***</td>
<td>-0.067**</td>
<td>-0.067**</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td>C</td>
<td>Eat Fruit</td>
<td>4.116***</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Race, Coefficient</td>
<td>4.116***</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Race + SES, Coefficient</td>
<td>4.116***</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td>D</td>
<td>Exercise</td>
<td>4.194*** 4.169***</td>
<td>-0.067**</td>
<td>-0.067**</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Race, Coefficient</td>
<td>4.194***</td>
<td>-0.067**</td>
<td>-0.067**</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Race + SES, Coefficient</td>
<td>4.169***</td>
<td>-0.067**</td>
<td>-0.067**</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td>E</td>
<td>Sleep 7 Hours</td>
<td>2.250*** 2.200***</td>
<td>0.002</td>
<td>0.002</td>
<td>0.002</td>
<td>0.002</td>
<td>0.002</td>
<td>0.002</td>
</tr>
<tr>
<td></td>
<td>Race, Coefficient</td>
<td>2.250***</td>
<td>0.002</td>
<td>0.002</td>
<td>0.002</td>
<td>0.002</td>
<td>0.002</td>
<td>0.002</td>
</tr>
<tr>
<td>F</td>
<td>Watch TV</td>
<td>0.006*** 0.004***</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Race, Coefficient</td>
<td>0.006***</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Race + SES, Coefficient</td>
<td>0.004***</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
</tr>
</tbody>
</table>

Note. SES = socioeconomic status. Low SES was defined as parents having less than high school education; high SES was defined as parents having a high school degree or higher. Models are for fixed effect coefficients.

*Reference group is White.

*Reference group is high SES.

**P < .05; ***P < .01; ****P < .001 (2-tailed tests).
As shown in model F in Tables 2 and 3, for both young adult men and women, the frequency of watching television remained consistently higher among minority racial/ethnic groups than among White young adults over this period (about a 1-hour difference per average weekday). Moreover, young adult women from a lower SES reported a greater frequency of television viewing than did women from higher SES over and above the effects of race/ethnicity (model F in Table 2).
Black young adults also tended to watch more television than did White young adults over this period. Consistent with other findings, the frequency of eating green vegetables was lower among young adult Blacks and Hispanics than among young adult Whites over this period. Young adult Black women also reported a lower frequency of eating fruit than did White women, and Hispanic women showed a trend of declining fruit consumption since 1984. Because low fruit and vegetable intake is associated with energy-dense, high-calorie diets, racial/ethnic differences in fruit and vegetable consumption may account for some of the racial/ethnic patterns in obesity. Although young adult women showed a marked improvement in the frequency of eating breakfast over this period, Black women were the only racial/ethnic group that did not show any overall gains. The effects of race/ethnicity were not explained by SES, which suggests that the observed racial and ethnic disparities in healthy behaviors were not a function of socioeconomic resources as conferred by parental education.

The association between sleep and obesity is increasingly being documented and the overall declines in sleep observed among all young adults since 1984 are provocative. Inadequate sleep may have some role in the increasing rates of obesity and overweight observed over this period.

Socioeconomic and racial/ethnic differences in the trajectories of these weight-related health behaviors have implications for future trends in social disparities in health. For example, health disparities among women may continue to increase if socioeconomically advantaged White women exhibit a trend toward increases in certain healthy behaviors (i.e., exercising, eating breakfast), whereas African American and Hispanic women follow a declining trend in the frequency of exercise, with little improvement in the frequency of consuming

### TABLE 3—Growth Curve Models for Health Behaviors in Young Adult Men Aged 19–26 Years By Race/Ethnicity and Socioeconomic Status, Monitoring the Future Study, 1984–2006

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>Race, Coefficient</th>
<th>Race + SES, Coefficient</th>
<th>Race, Coefficient</th>
<th>Race + SES, Coefficient</th>
<th>Race, Coefficient</th>
<th>Race + SES, Coefficient</th>
<th>Race, Coefficient</th>
<th>Race + SES, Coefficient</th>
<th>Race, Coefficient</th>
<th>Race + SES, Coefficient</th>
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</thead>
<tbody>
<tr>
<td>Year</td>
<td>-0.034***</td>
<td>-0.033***</td>
<td>-0.019***</td>
<td>-0.020***</td>
<td>-0.007***</td>
<td>-0.007***</td>
<td>-0.007***</td>
<td>-0.007***</td>
<td>-0.016***</td>
<td>-0.015***</td>
</tr>
<tr>
<td>Year²</td>
<td>0.002***</td>
<td>0.002***</td>
<td>0.002***</td>
<td>0.002***</td>
<td>0.002***</td>
<td>0.002***</td>
<td>0.002***</td>
<td>0.002***</td>
<td>0.002***</td>
<td>0.002***</td>
</tr>
<tr>
<td>Year×Black</td>
<td>0.030</td>
<td>0.026</td>
<td>0.013</td>
<td>0.013</td>
<td>-0.002</td>
<td>-0.003</td>
<td>-0.006</td>
<td>-0.008</td>
<td>-0.013</td>
<td>-0.009</td>
</tr>
<tr>
<td>Year×Hispanic</td>
<td>0.029</td>
<td>0.035</td>
<td>0.008</td>
<td>0.017</td>
<td>-0.015</td>
<td>-0.008</td>
<td>0.077</td>
<td>0.011</td>
<td>-0.014</td>
<td>-0.009</td>
</tr>
<tr>
<td>Year×other race</td>
<td>-0.001</td>
<td>-0.006</td>
<td>0.012</td>
<td>0.015</td>
<td>0.009</td>
<td>0.013</td>
<td>0.005</td>
<td>0.005</td>
<td>0.003</td>
<td>0.003</td>
</tr>
<tr>
<td>Year²×Black</td>
<td>-0.002</td>
<td>-0.002</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td>Year²×Hispanic</td>
<td>-0.002</td>
<td>-0.003</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td>Year²×other race</td>
<td>0.0004</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td>Year×low SES</td>
<td>-0.024</td>
<td>-0.004</td>
<td>-0.005</td>
<td>-0.013</td>
<td>-0.021*</td>
<td>-0.011</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Year²×low SES</td>
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Note: SES = socioeconomic status. Low SES was defined as parents having less than a high school education; high SES was defined as parents having a high school degree or higher. Models are for fixed effect coefficients.

*Reference group is White.

bReference group is high SES.

*P < .05; **P < .01; ***P < .001 (2-tailed tests).
fruit and vegetables or eating breakfast. These patterns support a “fundamental cause” hypothesis of poor health,70 which is based on the premise that socially advantaged groups have more access to knowledge, money, power, prestige, and beneficial social connections, which allows them to make healthy food choices31,32 (by having greater awareness of, access to, and resources to purchase healthy foods) or provides them with opportunities for exercise and physical activity.35,71 If young adults continue to differentially adopt more healthy behaviors as a function of their social position, health disparities in obesity and obesity-related illnesses may very well increase in future cohorts of young adults.

Because of a reliance on existing long-term survey data that were collected primarily for the purpose of understanding drug use, this analysis was constrained to a limited number of health behaviors. The findings are further restricted by the use of self-reports, with the consequence that healthy behaviors, such as exercise, may be overreported. However, we do not expect any overreporting to vary markedly across time, nor across gender, race/ethnic, and socioeconomic subgroups, which are the comparative groups of interest. The measure of television viewing was limited to weekday viewing and therefore underestimated viewing on a weekly basis. Other limitations included nonrandom attrition in the panel data, but this was to some degree statistically adjusted for in the analyses. Because the study participants were selected in their senior year of high school, high school dropouts were not represented.64 Because dropout rates differ by race/ethnicity, with Hispanics having higher rates, this could have some effect on race/ethnic comparisons.

Nevertheless, these results help to put in place an evidence base that will help to identify the best strategies to address the obesity epidemic.72,73 Primary prevention policy must focus on the behaviors and practices that contribute to an “energy gap” and excess weight, especially among youth and young adults. Our findings suggest that interventions (at both the individual and environmental levels) targeted toward increasing exercise may hold promise, particularly for Black women, who have experienced the most notable declines in exercise over this period. Policies and interventions should also be comprehensive, addressing both exercise as well as dietary intake behaviors from a multi-sectoral perspective.74 This includes educational and other types of interventions aimed at intra- and interpersonal factors that contribute to obesity, as well as policies and programs aimed at families, at institutions such as schools, businesses, and worksites, and at physical and social environments.75

Our results also highlight the importance of understanding healthy eating and physical activity behaviors from a life course perspective, in which nutrition and exercise practices start in childhood and carry through school and subsequent early adult and midlife environments.74 Without tailoring any policies or interventions toward the needs and circumstances of the “poorest communities and population groups,”74(p135) health disparities may very well increase if socially disadvantaged young adults continue to lag behind their more advantaged counterparts in the practice of healthy eating and exercise behaviors.

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### Contributors

P.J. Clarke originated the study, conducted the analyses, and wrote the first draft of the article. P.M. O’Malley assisted with the analyses, interpretation of the findings, and the writing of the article. L.D. Johnston, J.E. Schulenberg, and P. Lantz assisted with the interpretation of the findings and the writing of the article.

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### Human Participant Protection

All procedures are reviewed and approved on an annual basis by the University of Michigan’s institutional review board for compliance with federal guidelines for the treatment of human participants.

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