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# Neighborhood Poverty, College Attendance, and Diverging Profiles of Substance Use and Allostatic Load in Rural African American Youth

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**Abstract**

A subset of African American youth who live in impoverished neighborhoods displays resilient profiles academically and behaviorally. We hypothesized that this resilience might be "skin deep," in that the ongoing efforts needed to achieve success might take a physiological toll on these youth. At age 19, a total of 452 rural African American youth were assessed on broader contextual risk (neighborhood poverty) and external indicators of success (college attendance). One year later, participants were assessed on substance use and cumulative physiological risk (allostatic load). African American youth from more disadvantaged neighborhoods who attended college had lower levels of substance use but higher levels of allostatic load compared with those from less disadvantaged neighborhoods who attended college or with those who did not attend college. These findings indicate that a subset of African American youth from poor neighborhoods exhibits a profile of "skin-deep resilience" characterized by external successes combined with heightened internal physiological risk.

**Keywords**

substance use, allostatic load, poverty, education

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Individuals who grow up in impoverished neighborhoods are at greater risk for a variety of poor mental and physical health outcomes in life, including an increased risk of depression, substance abuse, and cardiovascular disease (Boardman, Finch, Ellison, Williams, & Jackson, 2001; Cutrona, Wallace, & Wesner, 2006; Diez-Roux et al., 2001). Nonetheless, a significant number of individuals who experience adversities such as poverty go on to achieve positive outcomes in life, a phenomenon labeled *resilience* (Masten & Coatsworth, 1998). In youth, this literature on resilience has primarily focused on psychological adaptation and has demonstrated how resilient youth confronting adversity exhibit numerous positive academic, behavioral, and social outcomes (Luthar, 2006; Masten & Obradovic, 2006; Rutter, 2000).

To succeed under contexts of high neighborhood poverty, resilient youth need to develop high levels of self-regulation, control, and competence (Brody, Kogan, & Grange, 2012; Masten, 2004, 2007). These traits enable these youth to avoid risky behaviors common in high-poverty neighborhoods, such as substance use, delinquent behaviors, and school failure (Blair & Diamond, 2008; Brody & Ge, 2001; Moffitt et al., 2011; Wills, Gibbons, Gerrard, & Brody, 2000; Wills, Pokhrel, Morehouse, & Fenster, 2011; Wills, Sandy, & Yaeger, 2002; Wills, Walker, Mendoza, & Ainette, 2006). At the same time, however, ongoing efforts to resist pressures to engage in risky behaviors may take an internal,

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physiological toll over time, particularly for African American youth from poor neighborhoods. That is, there may be a physiological cost to maintaining the high levels of self-regulation needed to succeed in the face of persistent life adversity, thereby resulting in resilience that is only "skin deep" (Brody, Yu, Chen, Miller, et al., 2013).

A number of researchers have argued that resilience is multidimensional (Luthar, Cicchetti, & Becker, 2000; Wright & Masten, 2005) and that resilience in one domain does not necessarily ensure resilience in another domain. We argue that this disconnect may be particularly evident when academic success, risky behaviors, and physical health are contrasted among disadvantaged African American youth, similar to disconnects between mental and physical health among African Americans (Jackson, Knight, & Rafferty, 2010).

To achieve social mobility in the United States, youth characterized by low socioeconomic status (SES) must confront and overcome multiple obstacles. They need to exhibit high levels of single-mindedness to push through barriers to educational and occupational success. At the same time, these youth must exhibit high levels of self-regulation by steering clear of risky behaviors that can jeopardize future prospects. Although these strategies are beneficial in the academic realm, they may come at a cost to physical health. In fact, we have argued that low-SES youth are most likely to maintain good health if they adopt a very different set of strategies called "shift and persist." According to this view, low-SES youth repeatedly face uncontrollable life stressors, which typically cannot be managed through the kinds of active-coping efforts that facilitate academic success. Instead, we have argued that for low-SES youth, coping efforts that involve acceptance and accommodation of the self to the stressor (e.g., through cognitive reappraisals), combined with endurance of adversity with strength by finding meaning in difficult situations and maintaining optimism, will be most beneficial physiologically (Chen & Miller, 2012; Chen, Lee, Cavey, & Ho, 2013).

In a previous study, we demonstrated this phenomenon of "skin-deep resilience." We found that rural African American preadolescents who came from low-SES families but who were reported by teachers to have high psychosocial competence (at age 11) displayed low levels of depression and externalizing behaviors years later but, at the same time, exhibited high levels of physiological risk (allostatic load; Brody, Yu, Chen, Miller, et al., 2013). These patterns are also consistent with John Henryism theory, in which high-effort coping, characterized by efficacious mental and physical vigor, a strong commitment to hard work, and a single-minded determination to succeed, is detrimental physiologically in certain groups. In particular, low-SES African American adults with high levels of John Henryism show higher blood pressure, greater total peripheral resistance, and increased risk of hypertension in comparison with low-SES African American adults with low levels of John Henryism (James, Keenan, Strogatz, Browning, & Garrett, 1992; James, Strogatz, Wing, & Ramsey, 1987).

In the present study, we tested the notion of skin-deep resilience in older rural African American youth (age 19) by assessing broader contextual indicators of risk and success, that is, neighborhood poverty (as an indicator of risk) and college attendance (as an indicator of success). We tested impacts on risky behaviors—youths' substance-use profiles—as well as on a composite indicator of physiological risk, allostatic load. Allostatic load is thought to reflect physiological wear and tear that results from the body's efforts to maintain homeostasis in response to stressors (McEwen, 1998). Over time, this wear and tear can manifest in the dysregulation of multiple physiological systems, including the cardiovascular, metabolic, autonomic, endocrine, and inflammatory systems (Seeman, Epel, Gruenewald, Karlamangla, & McEwen, 2010). Allostatic-load composites reflecting these systems are thought to indicate physical health risk, given that they have been shown to predict the onset of cardiovascular disease and all-cause mortality later in life (Karlamangla, Singer, & Seeman, 2006; Seeman, McEwen, Rowe, & Singer, 2001; Seeman, Singer, Rowe, Horwitz, & McEwen, 1997).

We postulated that skin-deep resilience might emerge from different factors across development and, thus, conducted a second test of the skin-deep-resilience hypothesis in older adolescents that used markers of risk and resilience relevant to this life stage (following our first study, which involved younger adolescents; Brody, Yu, Chen, Miller, et al., 2013). Skin-deep resilience is characterized by external success (e.g., behaviorally, academically) in the face of adversity (risk). With respect to risk, at younger ages, the family context is of central importance and comprises some of the most salient risks that children are exposed to (Repetti, Taylor, & Seeman, 2002). As children mature, however, they begin to spend the majority of their time outside the home and with their peers (Collins & Laursen, 2004; Steinberg, 2008), which makes the neighborhood context increasingly important. In poorer neighborhoods, this social context can entail potentially dangerous risks (e.g., violent crimes, norms and peer pressure related to substance use; Chen & Miller, 2013; Leventhal & Brooks-Gunn, 2000). Thus, in contrast to our earlier study (with youth age 11, in which we examined family material disadvantage), in the current study (with youth age 19), we examined neighborhood poverty as a broader contextual risk factor. With respect to indicators of success, among younger adolescents, success is perhaps best captured by teacher ratings

of a child (as we relied on in our previous study with teacher ratings of student competence). In contrast, for older adolescents, the ability to make it to college is a clear external indicator of success. For African American youth who grow up in impoverished neighborhoods, being able to go to college represents an accumulation of years of hard work, self-regulation, and single-minded determination to beat the odds. Thus, in the present study, we hypothesized that for older African American youth who experience risky (impoverished) neighborhoods, those who make it to college will look resilient in terms of having low levels of substance use but, at the same time, will reveal a toll of this success physiologically in terms of high levels of allostatic load.

## Method

### *Sample*

We tested our hypotheses using data from the longitudinal Strong African American Families Healthy Adult Panel (SHAPE) study. African American primary caregivers and a target youth selected from each family participated in annual data collections; youths' mean age was 11.2 years at the first assessment and 20.4 years at the last assessment. Of the youths in the sample, 53% were female and 47% were male. At baseline, 78% of the caregivers had completed high school or earned a general equivalency diploma. The families resided in nine rural counties in Georgia in small towns and communities in which poverty rates are among the highest in the nation and unemployment rates are above the national average (Proctor & Dalaker, 2003). At the first assessment, although the primary caregivers in the sample worked an average of 39.4 hr per week, 46.3% lived below federal poverty standards, with a median family income of $1,655 per month. At the last assessment, the proportion was 49.1% with a median income of $1,169 per month. The increase in the proportion of families living in poverty and the decrease in family income over time may have resulted from the economic recession that was occurring during 2010, when the last wave of data was collected.

At the first assessment, 667 families were selected randomly from lists of fifth-grade students that schools provided (see Brody et al., 2004, for a full description). From a sample of 561 families at the age 19 data collection (a retention rate of 84%), 500 emerging adults were selected randomly to participate in the assessment of allostatic load; of this subsample, 489 agreed to participate. Of these 489 participants, data were successfully collected from 479 (98%) at age 20. The current study was based on the 452 participants (202 male, 250 female; 94% of those from whom data were collected at age 20) nested within 91 census tracts who agreed to participate in the assessment of allostatic load and who provided data on all measures in the age 19 and age 20 data collections.

With respect to differences between the present study and our previous work (Brody, Yu, Chen, Miller, et al., 2013), although the sample is drawn from the same longitudinal study, in our earlier study, we focused on early adolescent indicators of skin-deep resilience at age 11 (family risk characterized by low SES and external success as indicated by teacher ratings of student competence), whereas in the present study, we focused on late-adolescent indicators of resilience at age 19 (risk characterized from the broader social environment by neighborhood poverty and success as indicated by college attendance).

### *Procedure*

Informed consent was obtained at each data-collection wave. Youths age 18 and older consented to their own participation. Participants were told that the purpose of the study was to identify predictors of health and well-being among rural African American adolescents. At age 19, self-report data were collected in participants' homes by two African American field researchers using a standardized protocol. Interviews were conducted privately; no other family members were present or able to overhear the conversation. Neighborhood characteristics were quantified using the U.S. Census Bureau's (2010) American Community Survey data for 2006 to 2010. Allostatic load and substance use were measured when the target youth were 20 years of age. Youth were compensated $100 at each wave of data collection. This study was approved by the institutional review board of the University of Georgia.

### *Measures*

***Neighborhood poverty.*** The measure of neighborhood poverty (percentage of residents in a neighborhood living below poverty) was created using the U.S. Census Bureau's American Community Survey. This nationwide survey is taken every year to collect data about the demographic, social, economic, and housing characteristics of the American population (U.S. Census Bureau, 2013). The data are available as 1-year, 3-year, and 5-year compilations. For this study, the 5-year estimates for 2006 to 2010 (U.S. Census Bureau, 2010) were used to quantify neighborhood characteristics in 2009, when the participants were aged 19. The economic and housing data were used to determine the percentage of residents in participants' neighborhoods ($N = 91$) whose income fell below the federal poverty level ($M = 0.25$, $SD = 0.10$).

***College attendance.*** At age 19, youths reported whether they were currently enrolled in high school, a vocational school, job corps, a 2-year college, a 4-year college or university, or not enrolled in any school. Education status was scored dichotomously as 1 if respondents were enrolled in a 2-year college or a 4-year college or university and as 0 for respondents not enrolled in postsecondary education. In this sample, 38.9% of the participants were enrolled in college.

***Substance use.*** Participants reported their past-month cigarette smoking, alcohol use, heavy drinking, and marijuana use (Brody et al., 2009). The items regarding past-month substance use were "During the past month, how many times have you: smoked cigarettes; drunk beer, wine, wine coolers, whiskey, gin, or other liquor; had three or more drinks of alcohol at one time; smoked marijuana?" Participants rated these four items on a 6-point scale ranging from *0* to *12 times or more*; scores were summed to form a past-month substance-use index ($M$ = 1.801, $SD$ = 2.776). We used the composite score in the analyses for substance-use involvement; this procedure is consistent with prior research (Brody et al., 2009; Wills et al., 2007).

***Emerging-adult allostatic load.*** The protocol for measuring allostatic load was based on procedures developed for field studies involving children and adolescents (Evans, 2003). Resting blood pressure was monitored with Dinamap Pro 100 (Critikon, Tampa, FL) while the youth sat reading quietly. Three readings were taken every 2 min, and the average of the last two readings was used as the resting index. This procedure yields highly reliable indices of chronic resting blood pressure (Kamarck et al., 1992). Overnight urine samples were collected for assays of catecholamines and cortisol. Beginning on the evening of data collection, all urine that a youth voided from 8 p.m. to 8 a.m. was stored on ice in a container with metabisulfite as a preservative. Total volume was recorded, and four 10-ml samples were randomly extracted and deep-frozen at –80° C until urine collection was completed. The pH of two of these samples was adjusted to 3 to inhibit oxidation of catecholamines. The frozen urine was delivered to the Emory University Hospital medical laboratory in Atlanta, Georgia, for assaying. Total unbound cortisol was measured with a radioimmunoassay (Contreras, Hane, & Tyrrell, 1986). Epinephrine and norepinephrine were assayed with high-pressure liquid chromatography with electrochemical detection (Riggin & Kissinger, 1977). Creatinine was assayed to control for differences in body size and incomplete urine voiding (Tietz, 1976). Technicians blind to the participants' risk status assayed the samples.

Allostatic load was calculated by summing the standardized scores of six indicators: overnight cortisol, epinephrine, and norepinephrine; resting diastolic and systolic blood pressure; and body mass index (weight in kilograms divided by the square of height in meters). The approach of standardizing and summing scores to calculate allostatic load is a standard approach in the literature, with sum totals across systems indicative of cumulative biological dysregulation and predictive of cardiovascular and mortality outcomes better than individual scores (Seeman et al., 1997; Seeman et al., 2001; Seeman et al., 2010). Researchers in prior studies of allostatic load in adults (Seeman et al., 2001), children (Evans, 2003), and adolescents (Brody et al., 2013) used similar metrics by combining multiple physiological indicators of risk into a total allostatic-load index. The mean of the allostatic-load composite was –0.044 ($SD$ = 3.196).

***Covariates.*** We controlled for a number of potential alternative explanations for study findings: demographic variables, including gender; neighborhood ethnic composition (the percentage of African American residents in respondents' census tracts); and cumulative family SES risk. *Cumulative family SES risk* was defined as the sum of six family SES risk indicators: family poverty as assessed using U.S. government criteria (an income-to-needs ratio of 1.5 or less), primary caregiver noncompletion of high school or an equivalent, primary caregiver unemployment, single-parent family structure, family receipt of Temporary Assistance for Needy Families, and income rated by the primary caregiver as less than adequate to meet all needs. Also included as covariates were factors potentially related to participants' college experiences. These included whether participants' primary caregivers had attended college, whether participants currently lived with their family, number of hours participants were employed, and financial stress (the extent to which respondents were unable to afford the basic necessities of life, such as food and clothing). These factors were assessed with a four-item measure; responses were made using a 4-point scale (Conger & Elder, 1994). We also measured perceived discrimination using a version of the Schedule of Racist Events adapted for adolescents (Brody et al., 2006; Landrine & Klonoff, 1996). This measure assesses the frequency of a list of nine specific discriminatory events in the past year; participants rate each item using a 3-point scale.

## *Plan of analysis*

The data's hierarchically nested structure (individual participants nested within 91 neighborhoods) presented an important data analytic challenge because participants

**Table 1.** Correlation Matrix for the Study Variables

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Allostatic load | — | | | | | | | | | | | |
| 2. Substance use | –.003 | — | | | | | | | | | | |
| 3. Neighborhood poverty | .040 | .015 | — | | | | | | | | | |
| 4. College attendance | –.078† | –.123** | –.047 | — | | | | | | | | |
| 5. Percentage of African American residents | –.029 | –.010 | .426** | .046 | — | | | | | | | |
| 6. SES-related risk | .042 | –.049 | .142** | –.248** | .012 | — | | | | | | |
| 7. Males | .192** | .186** | .014 | –.152** | –.002 | .002 | — | | | | | |
| 8. Number of hours employed | .029 | .032 | –.007 | –.092† | –.078† | –.079† | –.090† | — | | | | |
| 9. Financial stress | –.050 | .064 | –.052 | –.081† | .026 | .049 | –.012 | .053 | — | | | |
| 10. Racial discrimination | –.058 | .214** | –.085† | .033 | –.102* | –.103* | .016 | .109* | .122** | — | | |
| 11. Primary caregivers' college attendance | –.061 | .011 | –.112* | .230** | .043 | –.564** | .017 | .020 | –.120* | .060 | — | |
| 12. Living with families | .050 | .041 | –.026 | –.377** | –.101* | .017 | .080† | .096* | .052 | .030 | –.007 | — |

Note: $N = 452$. SES = socioeconomic status.
†$p < .10$, two-tailed. *$p \leq .05$, two-tailed. **$p \leq .01$, two-tailed.

could be influenced by common neighborhood environments. The resulting potential nonindependence is not controlled in traditional regression models. To avoid this problem, we used a complex sampling design model available in the Mplus 7 statistical software (TYPE= COMPLEX function; L. K. Muthén & Muthén, 2012; see also MacKinnon, 2008). This model produced sandwich standard errors of the estimated coefficients that were adjusted for 91 census tracts; this reduced Type I error inflation due to neighborhood clustering. This model was applied to the ordinary least squares regression model used to analyze the allostatic-load data, and a zero-inflated negative binomial regression model was used to analyze substance-use data because of the distribution of response for substance-use questions.

## Results

### *Descriptive statistics*

Approximately 29% of the participants lived in neighborhoods in which more than 30% of households fell below federal poverty standards. Of the study participants, 39.4% were enrolled in college at age 19. When the participants were 20 years old, past-month substance-use rates were 20% for cigarette smoking, 49% for alcohol use, 17% for heavy drinking, and 20% for marijuana use. See Table 1 for bivariate associations among study variables.

### *Tests of the study hypotheses*

***Substance use.*** The results of the analysis for substance use are presented in Table 2, Models A and B. Model A reveals the main effect for college attendance. Youth attending college used substances less than did youth who did not attend college. This main effect was qualified by the Neighborhood Poverty × College Attendance interaction, $b = -2.888$, 95% confidence interval (CI) = [–5.679, –0.097], $p = .043$, partial $R^2 = .008$. To interpret this finding, we plotted estimated levels of substance use at increasing levels of neighborhood poverty for youth who were or were not attending college. These results are presented in Figure 1. Residence in a high-poverty neighborhood was not associated with substance use for youth attending college, $b = -1.038$, 95% CI = [–2.966, 0.890], n.s. In contrast, neighborhood poverty was associated with substance use among those youth not attending college; the highest level of substance use was found among youth who lived in high-poverty neighborhoods and were not attending college, $b = 1.849$, 95% CI = [0.187, 3.512], $p = .029$.

To determine whether results were robust across the different types of substances, we conducted analyses with each specific substance. These analyses showed that the Neighborhood Poverty × College Attendance interaction was significant for smoking and marijuana use but not for alcohol use (see Table S1 in the Supplemental Material available online). Table S2 in the Supplemental Material presents bivariate associations among substance-use variables.

***Allostatic load.*** The results of the analyses for allostatic load are presented in Table 2, Models C and D. Model C revealed no main effects; Model D detected the hypothesized Neighborhood Poverty × College Attendance interaction, $b = 8.423$, 95% CI = [2.667, 14.180], $p = .004$, partial $R^2 = .014$. To interpret these results, we plotted

**Table 2.** Regression Models With Complex Sampling Design Depicting the Results of Main and Moderating Effects

| | Substance use | | | | Allostatic load | | | |
|---|---|---|---|---|---|---|---|---|
| | Model A | | Model B | | Model C | | Model D | |
| Variable | *b* | Odds ratio | *b* | Odds ratio | *b* | β | *b* | β |
| Neighborhood poverty | 0.476 | 1.610 | 1.849* | 6.353 | 1.030 | 0.030 | –2.650 | –0.076 |
| | (0.571) | | (0.848) | | (1.652) | | (1.846) | |
| College attendance (1 = in college) | –0.462** | 0.630 | 0.215 | 1.240 | –0.432 | –0.066 | –2.396** | –0.366 |
| | (0.151) | | (0.369) | | (0.359) | | (0.782) | |
| Neighborhood Poverty × College Attendance | | | –2.888* | 0.056 | | | 8.423** | 0.335 |
| | | | (1.424) | | | | (2.937) | |
| Control variable | | | | | | | | |
| Percentage of African American residents | 0.023 | 1.023 | –0.004 | 0.996 | –0.650 | –0.040 | –0.602 | –0.037 |
| | (0.357) | | (0.356) | | (0.779) | | (0.753) | |
| SES-related risk | –0.141† | 0.868 | –0.140† | 0.869 | –0.127 | –0.039 | –0.106 | –0.033 |
| | (0.074) | | (0.078) | | (0.152) | | (0.147) | |
| Males | 0.514** | 1.672 | 0.495** | 1.640 | 0.923** | 0.144 | 0.949** | 0.148 |
| | (0.132) | | (0.130) | | (0.274) | | (0.274) | |
| Number of hours employed | 0.000 | 1.000 | 0.000 | 1.000 | 0.012 | 0.056 | 0.013 | 0.062 |
| | (0.003) | | (0.003) | | (0.008) | | (0.008) | |
| Financial stress | 0.022 | 1.022 | 0.020 | 1.020 | –0.038 | –0.035 | –0.035 | –0.032 |
| | (0.026) | | (0.027) | | (0.050) | | (0.051) | |
| Racial discrimination | 0.095** | 1.100 | 0.091** | 1.095 | –0.019 | –0.020 | –0.009 | –0.010 |
| | (0.018) | | (0.019) | | (0.040) | | (0.041) | |
| Primary caregivers' college attendance | –0.051 | 0.950 | –0.064 | 0.938 | –0.273 | –0.043 | –0.213 | –0.033 |
| | (0.148) | | (0.150) | | (0.309) | | (0.301) | |
| Living with families | –0.122 | 0.885 | –0.080 | 0.923 | –0.106 | –0.017 | –0.124 | –0.019 |
| | (0.150) | | (0.146) | | (0.286) | | (0.285) | |
| Constant | 0.008 | 1.008 | –0.291 | 0.748 | 0.298 | | 1.045 | |
| | (0.383) | | (0.401) | | (0.697) | | (0.730) | |
| Dispersion | 1.120** | | 1.100** | | | | | |
| –2 Log likelihood | 1,571.416 | | 1,567.672 | | | | | |
| $R^2$ | | | | | .233 | | .247 | |

Note: A zero-inflated negative binominal regression model was used to analyze the substance-use data, and an ordinary least squares regression model was used to analyze the allostatic-load data. Robust standard errors shown in parentheses. $N_{(persons)}$ = 452; $N_{(neighborhoods)}$ = 96. SES = socioeconomic status.
†$p < .10$, two-tailed. *$p \leq .05$, two-tailed. **$p \leq .01$, two-tailed.

estimated levels of allostatic load at increasing levels of Neighborhood Poverty × College Attendance. Figure 2 shows an interaction consistent with the study hypothesis: For youth who lived in neighborhoods characterized by low poverty levels, college attendance was not associated with allostatic load 1 year later, whereas the effect of college attendance became stronger as neighborhood poverty increased. Or, put another way, among youth not in college, neighborhood poverty was not associated with allostatic load, $b$ = –2.650, 95% CI = [–6.269, 0.969], $p$ = .151. However, among youth in college, coming from a neighborhood with greater poverty was associated with higher allostatic load, $b$ = 5.774, 95% CI = [0.826, 10.722], $p$ = .022. Allostatic load was highest among youth who, at age 19, lived in high-poverty neighborhoods and were attending college.

***Is it the same youth who manifest both low substance use and high allostatic load?*** In an ancillary analysis to address this question, we created groupings of youth who came from either high neighborhood poverty (i.e., more than 30% of residents in the neighborhood living below poverty, $n$ = 108) or low neighborhood poverty (i.e., less than 30% of residents in the neighborhood living below poverty, $n$ = 344). The particular group that we are interested in comprises those individuals who come from high-poverty neighborhoods and who make it to college (24% of the group who went to college came from a high-poverty neighborhood). This group evidenced higher levels of allostatic load ($M$ = 0.40, $SD$ = 0.44, $t$ = 2.82, $p < .01$) as well as lower levels of substance use ($M$ = 1.47, $SD$ = 1.54, $t$ = 1.78, $p < .01$) compared with the group who came from high-poverty neighborhoods

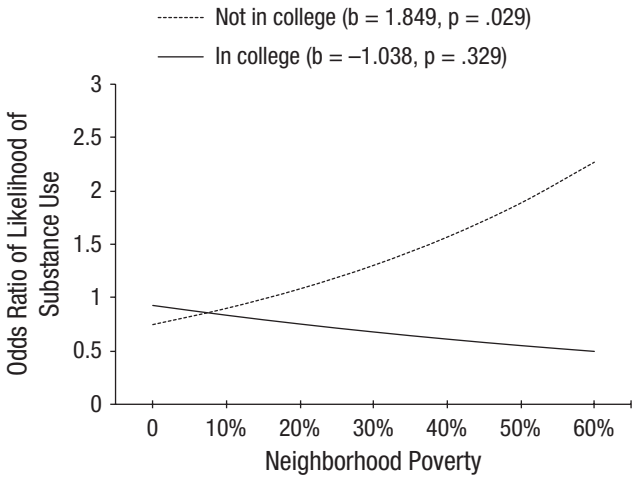


**Fig. 1.** Results: effect of neighborhood poverty on substance use by college attendance.

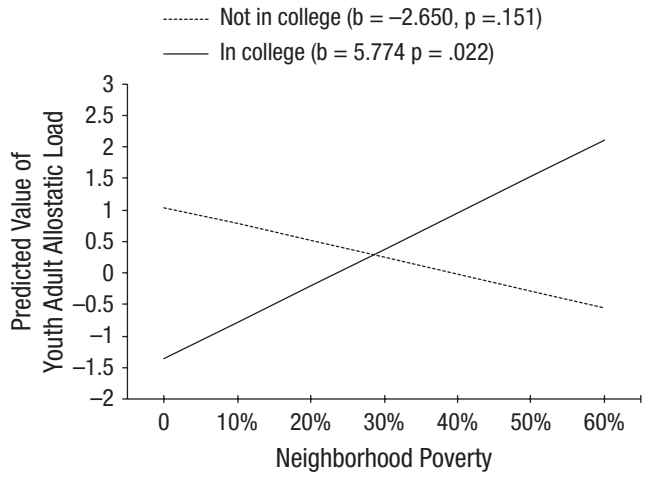


**Fig. 2.** Results: effect of neighborhood poverty on allostatic load by college attendance.

but who did not attend college (allostatic load: $M = 0.17$, $SD = 0.34$; substance use: $M = 2.44$, $SD = 3.80$).

***Are effects specific to neighborhood poverty?*** We hypothesized that neighborhood social contexts become increasingly important as adolescents mature and begin to spend the majority of their time outside the home. To test the specificity of these effects, we probed whether family SES risk interacted with college attendance to predict either substance use or allostatic load. Neither effect was significant, which indicated that effects in older adolescents are specific to neighborhood context risks—substance use: $b = –0.114$, 95% CI = [–0.381, 0.153], $p = .404$, partial $R^2 = .001$; allostatic load: $b = –0.011$, 95% CI = [–0.652, 0.631], $p = .974$, partial $R^2 = .000$.

## Discussion

The results from this study support the hypothesis of skin-deep resilience in a sample of rural, African American older adolescents. African American youth who came from high-poverty neighborhoods but who made it to college showed significantly lower rates of substance use (composite of smoking, drinking, and marijuana use) compared with their counterparts from high-poverty neighborhoods who did not attend college. At the same time, however, these same youth showed significantly higher levels of allostatic load compared with their counterparts who did not attend college and compared with youth from low-poverty neighborhoods who attended college.

The finding with respect to substance use is consistent with a large previous literature that has documented the links between college attendance and health-compromising behaviors. Youth who attend college are significantly less likely to use or abuse substances (drugs, cigarettes, or alcohol) than are their counterparts who do not attend college (Breslau, Lane, Sampson, & Kessler, 2008; Kessler, Foster, Saunders, & Stang, 1995; White, Labouvie, & Papadaratsakis, 2005). African American youth who are at risk by virtue of having grown up in disadvantaged neighborhoods show the same patterns in this study of having lower levels of substance use if they attend college. To make it out of impoverished circumstances and into college takes a tremendous amount of hard work and self-regulation, and these same skills may also allow youth to resist temptations to use substances (Wills et al., 2002; Wills et al., 2006). Thus, college attendance, and the underlying characteristics of students who make it to college, such as high levels of self-regulation, may serve as buffers to substance use in young adults.

This is especially important among African American youth because rates of drug use escalate dramatically during the transition to adulthood (Watt, 2008) and because African Americans who use substances experience more negative consequences, given an equivalent amount of consumption, than do members of other ethnic groups (Jones-Webb, 1998). This results in numerous racial disparities in drug-related outcomes in adulthood, including alcohol dependence and drug arrests (Galea & Rudenstine, 2005; Mitchell & Caudy, 2013). Thus, understanding the factors that may help buffer these youth from risky behavior trajectories as they enter into adulthood is critical.

At the same time, the findings with allostatic load suggest that these youth, despite appearing to be "success stories" by external indicators, are still at risk, in this case, for future health problems (as indicated by higher levels of allostatic load). For many of these youth, making it to college involves years of hard work, determination, and

effective self-regulation. In addition, once they are in college, African American youth who come from impoverished neighborhoods may experience additional stressors that stem from having to navigate an environment (college) that feels largely foreign to them. These stressors may include difficulties fitting in with peers who largely come from very different backgrounds, feelings of not belonging, and a lack of understanding about norms for successful college student behavior, such as how to speak up in class or how to approach professors if one is struggling in class. The burden of achieving despite these obstacles, and the self-regulation needed to be successful in the college environment, may take its toll internally. This internal toll is indicated by elevations in catecholamines, cortisol, blood pressure, and obesity—the composite of allostatic load that when taken together, predicts risk for cardiovascular diseases and all-cause mortality later in life (Seeman et al., 1997; Seeman et al., 2001). We note, however, that conclusions about the implications of both patterns should be qualified by the fact that the incremental variance accounted for by the Neighborhood Poverty × College Attendance interaction terms were small.

These findings of skin-deep resilience are consistent with previous literature on the physiological consequences of John Henryism in African American adults (James et al., 1987; James et al., 1992). These findings are also consistent with our previous study in which we demonstrated divergent patterns for mental health (depression, externalizing behaviors) versus physiological profiles among low-SES African American youth who showed high levels of competence at age 11 (Brody, Yu, Chen, Miller, et al., 2013). The present study extends this work to factors relevant at older developmental levels (age 19) by investigating the roles of broader neighborhood contexts and the effects of success stemming from college attendance. The findings in the present study also suggest that among older adolescents, the neighborhood social context may be more important than family circumstances for skin-deep resilience (as indicated by interactions with neighborhood poverty but not with family SES risk). These patterns are also consistent with a large literature that has demonstrated that there are independent and differential effects of family SES versus neighborhood SES on a variety of health outcomes (Chen & Paterson, 2006; Diez-Roux et al., 2001; Petersen et al., 2006; Petersen et al., 2008; Robert, 1998; Sloggett & Joshi, 1994).

We note that compared with some other research, the current findings postulate a somewhat different role for substance use in African Americans. For example, in seeking to explain why African Americans experience worse physical health compared with other groups but lower-than-expected rates of major mental disorders, Jackson (Jackson et al., 2010; Mezuk et al., 2010) suggested that African Americans may be more likely to engage in substance use as one method of coping with the multitude of daily life stressors that they experience and that this increased use of substances diminishes stress (and reduces the likelihood of mental disorders) but then contributes to the development of chronic physical health problems later in life. Jackson's theory explains *overall group differences* between African Americans and others in terms of mental and physical health outcomes. In contrast, our theory of skin-deep resilience is aimed at explaining a *subgroup* of African Americans who seem on the surface to be success cases because they look positive not only in terms of good mental health but also in terms of low levels of substance use. The focus in our theory is on the effortful self-regulation and competence needed to achieve these successes (including refraining from substance use) and the toll that this effort and determination can take physiologically.

Taken together, the patterns from this study and our previous one (Brody, Yu, Chen, Miller, et al., 2013) suggest important implications for the focus of prevention programs aimed at minority youth growing up under disadvantaged circumstances. The first is in terms of an awareness that the relevant risks to minority youth may shift from predominantly family factors to also include neighborhood factors as the youth enter older adolescence. Second is the implication that the relevant external indicators of success may also shift across development, from competence at school and lack of behavioral problems to college attendance and the college experience. In addition, many intervention programs target children on the basis of difficulties on external dimensions (e.g., school struggles or early substance use; Wyman, 2003). However, the present results suggest that targeting behavioral vulnerability is not sufficient, given that children who appear to be doing well overtly may be experiencing adverse physiological consequences of this success. Finding ways in future prevention programs to also identify and target these hidden costs of success may create additional long-term benefits in terms of physical health among at-risk populations.

One note about study patterns is that previous research has demonstrated that lower SES is associated with higher allostatic load (Seeman et al., 2004; Seeman et al., 2010), which we did not find in our sample. It may be the case that within our population, being "higher SES" (e.g., attending college) may come with additional pressures that offset the typical benefits of high SES found in other samples. In addition, we note that neighborhood poverty had small bivariate associations with other study variables, such as allostatic load, substance use, and college attendance. We are not sure of the reason for these small associations but speculate that the nature of the sample (rural African

American youth in the South) may make associations with poverty different from other studies that include a broader spectrum of racial/ethnic groups and SES.

Limitations of this study include the assumption that college attendance represents an accumulation of years of high-self regulation and effortful control among at-risk youth. We did not have direct measures of self-regulation or effortful control to be able to test key hypothesized processes or track the effects of the long-term accumulation of these processes over time. Nor did we have direct measures of the pressures that youth were facing in the different neighborhoods, such as peer pressure to engage in substance use or delinquent behaviors. Researchers in future studies need to explicitly characterize the stressors these youth are under and the efforts that they are making along the way to make it to college and to be successful while in college. In addition, this study was not able to rule out possible alternative explanations, such as academic performance, or other aspects of students' college experiences that may have contributed to the pattern of findings. Future studies that include follow-ups on the health side would be informative for understanding the clinical health implications as well as trajectories of health into adulthood related to skin-deep resilience. In addition, it is not known whether these results could generalize to other minority families or other families from impoverished neighborhoods.

In sum, the present study's findings reveal that older rural African American youth who come from impoverished neighborhoods and who make it to college show positive profiles in terms of reduced likelihood of substance use but, at the same time, show riskier profiles physiologically in terms of allostatic load. These findings suggest that resilience is multifactorial and that youth who exhibit resilience in one domain may not necessarily display resilience in other domains. Future approaches that make efforts to assess and address vulnerabilities across multiple domains may help our society to more effectively target interventions in ways that allow us to promote experiences of health and well-being more broadly construed among at-risk youth.

## Author Contributions

G. H. Brody designed the study. M. Lei analyzed the data under the supervision of G. H. Brody. E. Chen, G. E. Miller, and G. H. Brody interpreted the data and drafted the manuscript. All authors approved the final version of the manuscript for submission.

## Declaration of Conflicting Interests

The authors declared that they had no conflicts of interest with respect to their authorship or the publication of this article.

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## Supplemental Material

Additional supporting information may be found at http://cpx.sagepub.com/content/by/supplemental-data

## References

Blair, C., & Diamond, A. (2008). Biological processes in prevention and intervention: The promotion of self-regulation as a means of preventing school failure. *Development and Psychopathology*, *20*, 899–911. doi:10.1017/S0954579408000436

Boardman, J. D., Finch, B. K., Ellison, C. G., Williams, D. R., & Jackson, J. S. (2001). Neighborhood disadvantage, stress, and drug use among adults. *Journal of Health and Social Behavior*, *42*, 151–165.

Breslau, J., Lane, M., Sampson, N., & Kessler, R. C. (2008). Mental disorders and subsequent educational attainment in a US national sample. *Journal of Psychiatric Research*, *42*, 708–716. doi:10.1016/j.jpsychires.2008.01.016

Brody, G. H., Beach, S. R. H., Philibert, R. A., Chen, Y. F., Lei, M.-K., Murry, V. M., & Brown, A. C. (2009). Parenting moderates a genetic vulnerability factor in longitudinal increases in youths' substance use. *Journal of Consulting and Clinical Psychology*, *77*, 1–11. doi:10.1037/a0012996

Brody, G. H., Chen, Y. F., Murry, V. M., Ge, X., Simons, R. L., Gibbons, F. X., . . . Cutrona, C. E. (2006). Perceived discrimination and the adjustment of African American youths: A five-year longitudinal analysis with contextual moderation effects. *Child Development*, *77*, 1170–1189. doi:10.1111/j.1467-8624.2006.00927.x

Brody, G. H., & Ge, X. (2001). Linking parenting processes and self-regulation to psychological functioning and alcohol use during early adolescence. *Journal of Family Psychology*, *15*, 82–94.

Brody, G. H., Kogan, S. M., & Grange, C. M. (2012). Translating longitudinal, developmental research with rural African American families into prevention programs for rural African American youth. In R. B. King & V. Maholmes (Eds.), *The Oxford handbook of poverty and child development* (pp. 553–570). New York, NY: Oxford University Press.

Brody, G. H., Murry, V. M., Gerrard, M., Gibbons, F. X., Molgaard, V., McNair, L. D., . . . Neubaum-Carlan, E. (2004). The Strong African American Families program: Translating research into prevention programming. *Child Development*, *75*, 900–917. doi:10.1111/j.1467-8624.2004.00713.x

Brody, G. H., Yu, T., Chen, Y.-F., Kogan, S. M., Evans, G. W., Windle, M., . . . Philibert, R. A. (2013). Supportive family environments, genes that confer sensitivity, and allostatic load among rural African American emerging adults: A prospective analysis. *Journal of Family Psychology*, 27, 22–29. doi:10.1037/a0027829

Brody, G. H., Yu, T., Chen, E., Miller, G. E., Kogan, S. M., & Beach, S. R. H. (2013). Is resilience only skin deep? Rural African Americans' socioeconomic status–related risk and

competence in preadolescence and psychological adjustment and allostatic load at age 19. *Psychological Science*, *24*, 1285–1293.

Chen, E., & Miller, G. E. (2012). "Shift-and-persist" strategies: Why being low in socioeconomic status isn't always bad for health. *Perspectives on Psychological Science*, *7*, 135–158.

Chen, E., & Miller, G. E. (2013). Socioeconomic status and health: Mediating and moderating factors. *Annual Review of Clinical Psychology*, *9*, 723–749. doi:10.1146/annurev-clinpsy-050212-185634

Chen, E., Lee, W. K., Cavey, L., & Ho, A. (2013). Role models and the psychological characteristics that buffer low socioeconomic status youth from cardiovascular risk. *Child Development*, *84*, 1241–1252.

Chen, E., & Paterson, L. Q. (2006). Neighborhood, family, and subjective socioeconomic status: How do they relate to adolescent health? *Health Psychology*, *25*, 704–714.

Collins, W. A., & Laursen, B. (2004). Parent-adolescent relationships and influences. In R. M. Lerner & L. Steinberg (Eds.), *Handbook of adolescent psychology* (2nd ed., pp. 331–361). New York, NY: Wiley.

Conger, R. D., & Elder, G. H. (1994). *Families in troubled times*. New York, NY: Aldine de Gruyter.

Contreras, L. N., Hane, S., & Tyrrell, J. B. (1986). Urinary cortisol in the assessment of pituitary-adrenal function: Utility of 24-hour and spot determinations. *Journal of Clinical Endocrinology and Metabolism*, *62*, 965–969. doi:10.1210/jcem-62-5-965

Cutrona, C. E., Wallace, G., & Wesner, K. A. (2006). Neighborhood characteristics and depression: An examination of stress processes. *Current Directions in Psychological Science*, *15*, 188–192. doi:10.1111/j.1467-8721.2006.00433.x

Diez-Roux, A. V., Merkin, S. S., Arnett, D., Chambless, L., Massing, M., Nieto, F. J., . . . Watson, R. L. (2001). Neighborhood of residence and incidence of coronary heart disease. *New England Journal of Medicine*, *345*, 99–106.

Evans, G. W. (2003). A multimethodological analysis of cumulative risk and allostatic load among rural children. *Developmental Psychology*, *39*, 924–933. doi:10.1037/0012-1649.39.5.924

Galea, S., & Rudenstine, S. (2005). Challenges in understanding disparities in drug use and its consequences. *Journal of Urban Health*, *82*(Suppl. 3), iii5–ii12. doi:10.1093/jurban/jti059

Jackson, J. S., Knight, K. M., & Rafferty, J. A. (2010). Race and unhealthy behaviors: Chronic stress, the HPA axis, and physical and mental health disparities over the life course. *American Journal of Public Health*, *100*, 933–939. doi:10.2105/AJPH.2008.143446

James, S. A., Keenan, N. L., Strogatz, D. S., Browning, S. R., & Garrett, J. M. (1992). Socioeconomic status, John Henryism, and blood pressure in Black adults: The Pitt County Study. *American Journal of Epidemiology*, *135*, 59–67.

James, S. A., Strogatz, D. S., Wing, S. B., & Ramsey, D. L. (1987). Socioeconomic status, John Henryism, and hypertension in Blacks and Whites. *American Journal of Epidemiology*, *126*, 664–673.

Jones-Webb, R. (1998). Drinking patterns and problems among African-Americans: Recent findings. *Alcohol Health and Research World*, *22*, 260–264.

Kamarck, T. W., Jennings, J. R., Debski, T. T., Glickman-Weiss, E., Johnson, P. S., Eddy, M. J., & Manuck, S. B. (1992). Reliable measures of behaviorally-evoked cardiovascular reactivity from a PC-based test battery: Results from student and community samples. *Psychophysiology*, *29*, 17–28. doi:10.1111/j.1469-8986.1992.tb02006.x

Karlamangla, A. S., Singer, B. H., & Seeman, T. E. (2006). Reduction in allostatic load in older adults is associated with lower all-cause mortality risk: MacArthur Studies of Successful Aging. *Psychosomatic Medicine*, *68*, 500–507. doi:10.1097/01.psy.0000221270.93985.82

Kessler, R. C., Foster, C. L., Saunders, W. B., & Stang, P. E. (1995). Social consequences of psychiatric disorders, I: Educational attainment. *American Journal of Psychiatry*, *152*, 1026–1032.

Landrine, H., & Klonoff, E. A. (1996). The Schedule of Racist Events: A measure of racial discrimination and a study of its negative physical and mental health consequences. *Journal of Black Psychology*, *22*, 144–168.

Leventhal, T., & Brooks-Gunn, J. (2000). The neighborhoods they live in: The effects of neighborhood residence on child and adolescent outcomes. *Psychological Bulletin*, *126*, 309–337.

Luthar, S. S. (2006). Resilience in development: A synthesis of research across five decades. In D. Cicchetti & D. J. Cohen (Eds.), *Developmental psychopathology: Vol. 3*. Risk, disorder, and adaptation (2nd ed., pp. 739–795). New York, NY: John Wiley & Sons.

Luthar, S. S., Cicchetti, D., & Becker, B. (2000). The construct of resilience: A critical evaluation and guidelines for future work. *Child Development*, *71*, 543–562.

MacKinnon, D. P. (2008). Introduction to statistical mediation analysis. London, England: Routledge.

Masten, A. S. (2004). Regulatory processes, risk, and resilience in adolescent development. *Annals of the New York Academy of Sciences*, *1021*, 310–319.

Masten, A. S. (2007). Resilience in developing systems: Progress and promise as the fourth wave rises. *Development and Psychopathology*, *19*, 921–930.

Masten, A. S., & Coatsworth, J. D. (1998). The development of competence in favorable and unfavorable environments. *American Psychologist*, *53*, 205–220.

Masten, A. S., & Obradovic, J. (2006). Competence and resilience in development. *Annals of the New York Academy of Sciences*, *1094*, 13–27.

McEwen, B. S. (1998). Protective and damaging effects of stress mediators. *New England Journal of Medicine*, *338*, 171–179.

Mezuk, B., Rafferty, J. A., Kershaw, K. N., Hudson, D., Abdou, C. M., Lee, H., . . . Jackson, J. S. (2010). Reconsidering the role of social disadvantage in physical and mental health: Stressful life events, health behaviors, race, and depression. *American Journal of Epidemiology*, *172*, 1238–1249. doi:10.1093/aje/kwq283

Mitchell, O., & Caudy, M. S. (2013). Examining racial disparities in drug arrests. *Justice Quarterly*. Advance online publication. doi:10.1080/07418825.2012.761721

Moffitt, T. E., Arseneault, L., Belsky, D., Dickson, N., Hancox, R. J., Harrington, H., . . . Caspi, A. (2011). A gradient of childhood self-control predicts health, wealth, and public safety. *Proceedings of the National Academy of Sciences, USA*, *108*, 2693–2698. doi:10.1073/pnas.1010076108

Muthén, L. K., & Muthén, B. O. (2012). *Mplus 7.0 user's guide*. Los Angeles, CA: Authors.

Petersen, K. L., Bleil, M. E., McCaffery, J., Mackey, R. H., Sutton-Tyrrell, K., Muldoon, M. F., & Manuck, S. B. (2006). Community socioeconomic status is associated with carotid artery atherosclerosis in untreated, hypertensive men. *American Journal of Hypertension*, *19*, 560–566. doi:10.1016/j.amjhyper.2005.12.008

Petersen, K. L., Marsland, A. L., Flory, J., Votruba-Drzal, E., Muldoon, M. F., & Manuck, S. B. (2008). Community socioeconomic status is associated with circulating Interleukin-6 and C-reactive protein. *Psychosomatic Medicine*, *70*, 646–652.

Proctor, B. D., & Dalaker, J. (2003). *Poverty in the United States: 2002* (Current Population Reports, Series P60-222). Washington, DC: U.S. Census Bureau.

Repetti, R. L., Taylor, S. E., & Seeman, T. (2002). Risky families: Family social environments and the mental and physical health of offspring. *Psychological Bulletin*, *128*, 330–366.

Riggin, R. M., & Kissinger, P. T. (1977). Determination of catecholamines in urine by reverse-phase liquid chromatography with electrochemical detection. *Analytical Chemistry*, *49*, 2109–2111. doi:10.1021/ac50021a052

Robert, S. A. (1998). Community-level socioeconomic status effects on adult health. *Journal of Health and Social Behavior*, *39*, 18–37.

Rutter, M. (2000). Resilience reconsidered: Conceptual considerations, empirical findings, and policy implications. In J. P. Shonkoff & S. J. Meisels (Eds.), *Handbook of early childhood intervention* (2nd ed., pp. 651–682). New York, NY: Cambridge University Press.

Seeman, T. E., Crimmins, E., Huang, M. H., Singer, B., Bucur, A., Gruenewald, T., . . . Reuben, D. B. (2004). Cumulative biological risk and socio-economic differences in mortality: MacArthur Studies of Successful Aging. *Social Science & Medicine*, *58*, 1985–1997.

Seeman, T., Epel, E., Gruenewald, T., Karlamangla, A., & McEwen, B. S. (2010). Socio-economic differentials in peripheral biology: Cumulative allostatic load. *Annals of the New York Academy of Sciences*, *1186*, 223–239. doi:10.1111/j.1749-6632.2009.05341.x

Seeman, T. E., McEwen, B. S., Rowe, J. W., & Singer, B. H. (2001). Allostatic load as a marker of cumulative biological risk: MacArthur Studies of Successful Aging. *Proceedings of the National Academy of Sciences, USA*, *98*, 4770–4775. doi:10.1073/pnas.081072698

Seeman, T. E., Singer, B. H., Rowe, J. W., Horwitz, R. I., & McEwen, B. S. (1997). Price of adaption—Allostatic load and its health consequences: MacArthur Studies of Successful Aging. *Archives of Internal Medicine*, *157*, 2259–2268.

Sloggett, A., & Joshi, H. (1994). Higher mortality in deprived areas: Community or personal disadvantage. *British Medical Journal*, *309*, 1470–1474.

Steinberg, L. (2008). *Adolescence* (8th ed.). New York, NY: McGraw-Hill.

Tietz, N. W. (Ed.). (1976). *Fundamentals of clinical chemistry* (2nd ed.). Philadelphia, PA: Saunders.

U.S. Census Bureau. (2010). *American Community Survey 2010 data release*. Retrieved from http://www.census.gov/acs/www/data_documentation/2010_release/

U.S. Census Bureau. (2013). *American Community Survey information guide*. Retrieved from http://www.census.gov/acs/www/about_the_survey/acs_information_guide/flipbook/

Watt, T. T. (2008). The race/ethnic age crossover effect in drug use and heavy drinking. *Journal of Ethnicity in Substance Abuse*, *7*, 93–114. doi:10.1080/15332640802083303

White, H. R., Labouvie, E. W., & Papadaratsakis, V. (2005). Changes in substance use during the transition to adulthood: A comparison of college students and their noncollege age peers. *Journal of Drug Issues*, *35*, 281–306.

Wills, T. A., Gibbons, F. X., Gerrard, M., & Brody, G. H. (2000). Protection and vulnerability processes relevant for early onset of substance use: A test among African American children. *Health Psychology*, *19*, 253–263.

Wills, T. A., Murry, V. M., Brody, G. H., Gibbons, F. X., Gerrard, M., Walker, C., . . . Ainette, M. G. (2007). Ethnic pride and self-control related to protective and risk factors: Test of the theoretical model for the Strong African American Families program. *Health Psychology*, *26*, 50–59. doi:10.1037/0278-6133.26.1.50

Wills, T. A., Pokhrel, P., Morehouse, E., & Fenster, B. (2011). Behavioral and emotional regulation and adolescent substance use problems: A test of moderation effects in a dual-process model. *Psychology of Addictive Behaviors*, *25*, 279–292. doi:10.1037/a0022870

Wills, T. A., Sandy, J. M., & Yaeger, A. M. (2002). Moderators of the relation between substance use level and problems: Test of a self-regulation model in middle adolescence. *Journal of Abnormal Psychology*, *111*, 3–21.

Wills, T. A., Walker, C., Mendoza, D., & Ainette, M. G. (2006). Behavioral and emotional self-control: Relations to substance use in samples of middle and high school students. *Psychology of Addictive Behaviors*, *20*, 265–278. doi:10.1037/0893-164X.20.3.265

Wright, M. O. D., & Masten, A. S. (2005). Resilience processes in development: Fostering positive adaptation in the context of adversity. In S. Goldstein & R. Brooks (Eds.), *Handbook of resilience in children* (pp. 17–37). New York, NY: Kluwer Academic/Plenum.

Wyman, P. A. (2003). Emerging perspectives on context specificity of children's adaptation and resilience: Evidence from a decade of research with urban children in adversity. In S. S. Luthar (Ed.), *Resilience and vulnerability: Adaptation in the context of childhood adversities* (pp. 293–317). New York, NY: Cambridge University Press.