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Low Social Status Markers: Do They Predict Depressive Symptoms in Adolescence?

Benita Jackson and

Benita Jackson, Department of Psychology, Smith College

Elizabeth Goodman

Elizabeth Goodman, Center for Child and Adolescent Health Policy, MassGeneral Hospital for Children.

Abstract

Some markers of social disadvantage are associated robustly with depressive symptoms among adolescents: female gender and lower socioeconomic status (SES), respectively. Others are associated equivocally, notably Black v. White race/ethnicity. Few studies examine whether markers of social disadvantage by gender, SES, and race/ethnicity jointly predict self-reported depressive symptoms during adolescence; this was our goal. Secondary analyses were conducted on data from a socioeconomically diverse community-based cohort study of non-Hispanic Black and White adolescents ($N = 1,263$, 50.4% female). Multivariable general linear models tested if female gender, Black race/ethnicity, and lower SES (assessed by parent education and household income), and their interactions predicted greater depressive symptoms reported on the Center for Epidemiological Studies-Depression scale. Models adjusted for age and pubertal status. Univariate analyses revealed more depressive symptoms in females, Blacks, and participants with lower SES. Multivariable models showed females across both racial/ethnic groups reported greater depressive symptoms; Blacks demonstrated more depressive symptoms than did Whites but when SES was included this association disappeared. Exploratory analyses suggested Blacks gained less mental health benefit from increased SES. However there were no statistically significant interactions among gender, race/ethnicity, or SES. Taken together, we conclude that complex patterning among low social status domains within gender, race/ethnicity, and SES predicts depressive symptoms among adolescents.

Keywords

Depressive symptoms; adolescents; gender; socioeconomic status; race/ethnicity

Rates of depression are markedly greater in adolescence than in childhood (Costello et al., 2002) as a function of many normative developmental transitions including those in the biological, cognitive, affective, and social domains (Petersen et al., 1993). Furthermore, adolescence is a critical time for emerging differences between social groups in the incidence of depressive symptoms and major depressive disorder (Nolen-Hoeksema & Girgus, 1994; Petersen et al., 1993). Part of the explanation for these differences may be *low social status*. Markers of social status that are particularly salient to health and well-being across the lifespan include gender, socioeconomic status (SES), and race/ethnicity (Inhorn & Whittle, 2001; Jackson & Williams, 2006; Krieger, Rowley, Herman, Avery, & Phillips, 1993).

Among American youth, greater depressive symptoms have been associated with lower social status particularly in the domain of gender. Indeed, one of the most robust findings in epidemiology is that female gender is associated with greater depressive symptoms (Nolen-Hoeksema & Girgus, 1994; Petersen et al., 1993). This could be because female gender is associated with lower status (Jun, Subramanian, Gortmaker, & Kawachi, 2004); for example, women who live in states with more gender inequality—in employment and earnings, economic autonomy, and reproductive rights—report more depressive symptoms (Chen, Subramanian, Acevedo-Garcia, & Kawachi, 2005). There is strong consensus in the literature that female predominance in depressive symptoms burgeons during adolescence (Nolen-Hoeksema & Girgus, 1994; Petersen et al., 1993).

The notion that lower social status positions are associated with worse mental health outcomes in youth is supported also by studies showing that lower SES is associated with greater depressive symptoms. This latter finding has been replicated in different adolescent samples across a variety of measures for both SES (e.g., parent education, household income, parent perceived financial stress) and depressive symptoms (e.g., Center for Epidemiologic Studies-Depression [CES-D] Scale, Child Behavior Checklist, Diagnostic Interview Schedule for Children; Costello, Swendsen, Rose, & Dierker, 2008; Goodman et al., 2003; Goodman, 1999; Roberts, Roberts, & Chen, 1997; Takeuchi, Williams, & Adair, 1991; Tracy, Zimmerman, Galea, McCauley, & Vander Stoep, 2008) including studies that suggest lower childhood SES predicts greater *adult* depressive symptoms (Gilman, Kawachi, Fitzmaurice, & Buka, 2002; Gilman, Kawachi, Fitzmaurice, & Buka, 2003; Walsemann, Gee, & Geronimus, 2009).

The evidence linking low status race/ethnicity with depressive symptoms is less straightforward than that related to gender and SES. If social disadvantage increases risk for depressive symptoms, we might expect, for example, greater depressive symptoms in Black compared to White American teenagers. Yet across studies evidence for the presence and direction of Black-White differences in depressive symptoms during adolescence is equivocal (Perreira, Deeb-Sossa, Harris, & Bollen, 2005; Petersen et al., 1993). While some studies show that Black adolescents report higher depressive symptoms than Whites adolescents (Costello et al., 2008; Wight, Aneshensel, Botticello, & Sepulveda, 2005) others show no difference (Casper, Belanoff, & Offer, 1996; Pumariega, Johnson, Sheridan, & Cuffe, 1996; Schraedley, Gotlib, & Hayward, 1999; Siegel, Aneshensel, Taub, Cantwell, & Driscoll, 1998), and still others show Whites reporting relatively higher depressive symptoms (McLeod & Owens, 2004). Being in a low status racial/ethnic group is often collinear with lower SES (Kawachi, Daniels, & Robinson, 2005). Further, higher SES confers less health benefit to Black Americans than White Americans (Cummings & Jackson, 2008; Jackson & Stewart, 2003; Jackson & Williams, 2006). Thus, some of the mixed findings on depressive symptoms in Black-White differences might also stem from the fact that the research did not consistently examine SES in conjunction with these symptoms.

Few studies have considered gender, SES, and race/ethnicity and their interactions as correlates of depressive symptoms during the critical developmental period of adolescence. For example, a paper reporting data from a representative sample of adolescents in the United States found that in univariate models, female gender, non-White race/ethnicity, and lower SES (highest parent education and household income) each predicted higher rates of new-onset depressive episode one year later, and in multivariable models adjusting for baseline depressive symptoms, female gender and lower SES (income) maintained these associations (Van Voorhees et al., 2008). However, the authors did not examine whether there were interactive effects among these low social status markers. Moreover, they examined diagnostic depressive criteria rather than symptoms (Van Voorhees et al., 2008).

Other research suggests considering gender and SES together to understand internalizing symptoms, like depressive symptoms, during adolescence (Mendelson, Kubzansky, Datta, & Buka, 2008). In this literature, race/ethnicity generally has been treated as a covariate and its main and interactive effects not examined. Research by McLeod and Owens (2004), who studied gender, race/ethnicity, SES, and their interactions in adolescents, found that early life poverty was associated more strongly with depressive symptoms for Black compared to White youth but the investigation was limited by having only mother's reports of child's symptoms and by dichotomous SES measures (poverty v. not; (McLeod & Owens, 2004).

The Current Study

We examine the social patterning of depressive symptoms in adolescence with data from a bi-racial, socioeconomically diverse community-based sample of Black and White adolescents. Our investigation examined three dimensions of social status: gender, race/ethnicity, and SES. Based on previous literature, we hypothesized that 1) low social status markers would predict greater depressive symptoms: girls, Blacks, and those with parents of lower SES each would have elevated depressive symptoms and 2) Blacks would glean less mental health benefit from SES increases than would Whites. An important contribution of this paper is that we also tested for interactive effects among gender, race/ethnicity, and SES in predicting self-reported depressive symptoms among adolescents.

Method

Participants

Data were from the Princeton School District Study, details of which can be found elsewhere (Dolan et al., 2005; Goodman, Daniels, & Dolan, 2007; Goodman, McEwen, Dolan, Schafer-Kalkhoff, & Adler, 2005; Goodman, McEwen, Huang, Dolan, & Adler, 2005). The Midwestern school district from which participants were sampled "is a well-defined, racially integrated (African American, Non-Hispanic [W]hite), urban-suburban school district with a wide range of socioeconomic status in each ethnic group" (Dolan et al., 2005, p. 752). Approval to conduct the analyses was obtained from the Institutional Review Boards at the authors' institutions. The current cross-sectional study uses baseline data collected in the 2001-2002 school year. Inclusion criteria were 1) Black or White race/ethnicity (both non-Hispanic), 2) in 7-12th grade, with 3) complete data available on gender, at least one of the two SES indicators available in the dataset (parent education and household income), age, and pubertal status. This yielded an eligible cohort of 1,263. This cohort represents 79.0% of Black adolescents and 90.6% of White adolescents drawn from the 1,488 participants of the larger study who provided information on depressive symptoms and parent education. Data were missing for the following variables: parent education only ($n = 217$), pubertal status only ($n = 3$), and both ($n = 5$). Compared to those whose data were retained, the 225 participants dropped due to missing data were more likely to be Black ($p < .001$); there were no gender, age, or pubertal status differences.

Measures

Gender and race/ethnicity were ascertained from school records.

Socioeconomic status (SES) is a complex, difficult to measure construct, and has been assessed by many factors including but not limited to education, income, occupation, and wealth (Krieger, Williams, & Moss, 1997). In the current analyses we had access to both highest parent education and household income as indicators of SES. Their Spearman rank correlation coefficient was .64, $p < .001$, suggesting that highest parent education and household income are strongly but not entirely overlapping constructs. As Krieger and

colleagues note, when using education as a proxy for SES, it may be better to ascertain educational credentials (e.g., high school graduate) rather than years of education (Krieger et al., 1997). This is because the difference between, for example, 9th and 10th grade is not the same as the difference between 11th and 12th grade. Parent education was reported by a parent or guardian, who also reported education attained by one's current spouse/partner. The highest level attained between both parent figures was used as a proxy for the child's SES. Levels were reported ranging from never attended school to attained more than professional training beyond a four-year college or university. To retain roughly equivalent groups while maximizing the range across SES, for the current analyses we had four levels: high school, General Education Diploma (GED), or less; trade school post high school or some college; college graduate; and professional degree beyond college. Household income—total pre-tax from all sources in the last 12 months—was also reported by a parent or guardian in nine ordered categories ranging from less than \$5,000 to greater than \$100,000. For the current analyses, we used the following categories: less than \$25,000, \$25,000-\$49,000, \$50,000-\$74,000, \$75,000-\$100,000, and greater than \$100,000. For those missing household income ($n = 178$), the median for participants matched on race/ethnicity and parent education was substituted in place of the missing income values. For 12 participants missing household income the median fell between category values (e.g., 1.5 instead of 1 or 2) and were assigned the higher value.

Depressive symptoms were ascertained using the Center for Epidemiologic Studies-Depression (CES-D) Scale, a widely used 20-item measure designed for epidemiological studies of the general population (Radloff, 1991; Radloff, 1977). Items queried negative affect, positive affect, somatic complaints, and interpersonal relations (Perreira et al., 2005). Participants indicated how often they have experienced symptoms during the past week on scale of "0" (rarely or none of the time) to "3" (most or all of the time). CES-D scores were calculated for participants answering at least 75% of the items. Those missing one to five items were given the mean score of the other items combined, for each missing item. In the current sample, the internal consistency determined by Cronbach's coefficient alpha was .84.

Covariates—Given that depressive symptoms in adolescence varies with age (Franko et al., 2005) and pubertal status (Graber, Lewinsohn, Seeley, & Brooks-Gunn, 1997), each was included as a covariate. Date of birth was taken from school records and converted to age in years. Pubertal status was assessed during the study visit as previously described (Dolan et al., 2005). Participants were determined to be pre-, peri-, or post-pubertal. For purposes of analysis, because only 2.3% of the 1,263 participants were determined to be pre-pubertal, pre- and peri-pubertal status were combined into one group. The number of people living in a household influences the purchasing power derived from household income. Thus, in multivariable models with household income, we included the number of people living in the participant's household as a covariate. In univariate models, number of people living in the household was treated as categorical (1-3, 4, 5-9) and in multivariable models, it was treated as continuous.

Analytic Strategy

We began by calculating means and standard deviations for all variables. Univariate analyses were conducted to test for mean differences in depressive symptoms by gender, race/ethnicity, and SES indicators using t -tests for gender and race/ethnicity, and one-way ANOVA for SES. Additionally, we performed a t -test with pubertal status and one-way ANOVA and numbers of people living in the household, and calculated the correlation between age and depressive symptoms. To conduct multivariable analyses predicting depressive symptoms, we ran five general linear models with the full sample. Model 1 had

gender as a predictor. Model 2 added race/ethnicity and Model 3 added parent education. Model 4 substituted parent education in Model 3 with household income, and Model 5 included gender, race/ethnicity, parent education, and income. Each two- and three-way interaction was tested. Age and pubertal status were included as covariates in all models. Number of people living in the participant's household was included as a covariate in models with household income; for those analyses the sample size was reduced to 1,173 to exclude the 90 participants missing on that covariate. We improved the normality of the 20-item CES-D measure by adding a constant of 1 to remove zero values and allow its log transformation (Osborne, 2002).

Results

Table 1 presents data describing the study composition. In the full sample, the mean score for depressive symptoms was 13.8, $SD = 8.4$, ranging from 0 to 59. For each of the three social status domains, as predicted, the relatively lower status group evidenced higher depressive symptoms. Specifically, female ($F(1,216) = 5.74, p < .001$, equal variances not assumed) and Black ($F(1,231) = 2.23, p = .026$, equal variances not assumed) participants reported more depressive symptoms than their male and White counterparts, respectively. Depressive symptoms also varied by parent education level, ($F(3, 1,259) = 11.55, p < .001$) and by household income, ($F(4, 1,258) = 9.31, p < .001$). Post-hoc comparisons were conducted with Scheffé tests. As participants' parent education went from a professional degree, to a college degree, to less than a high school degree or equivalent, there were correspondingly more depressive symptoms. Similarly, as household income went from more than \$100,000 to less than that, there were more depressive symptoms; there were no statistically significant differences in depressive symptoms among levels of household income below \$100,000. There was no correlation between age and depressive symptoms, and no statistically significant differences in depressive symptoms by pubertal status or number of members living in the participant's household. However to be conservative we retained age, pubertal status, and household size as covariates in the analytic models.

Table 2 presents the results of the multivariable general linear model analyses. Depressive symptoms were higher in females (Model 1), and in Blacks (Model 2), until SES was included in the model (Models 3-5). At that point gender but not the race/ethnicity association remained significant, regardless of whether SES was measured with parent education (Model 3 omnibus test, $F(3, 1,255) = 12.83, p < .001$), household income (Model 4 omnibus test, $F(4, 1,163) = 12.26, p < .001$), or both (Model 5 omnibus tests – parent education, $F(3, 1,160) = 3.73, p = .011$, and household income $F(4, 1,160) = 5.10, p < .001$). In other words, Black race/ethnicity did not predict greater depressive symptoms when SES was taken into account. In all cases SES was inversely associated with depressive symptoms. With both SES indicators in the model, the gradient remained clear for household income and less robust but still apparent for parent education. Further adding the two- and three-way interactions of gender, race/ethnicity, and SES to the model were not statistically significant and explained no more variance (data not shown). For parsimony the interactions were dropped; Table 2 presents data from these trimmed models.

To explore the finding that Black race/ethnicity significantly predicted greater depressive symptoms until the inclusion of SES indicators, we conducted post-hoc analyses. Tables 3a and 3b present models stratified by race/ethnicity. For both racial/ethnic groups, female gender remained an independent predictor of greater depressive symptoms. Among Black adolescents, the model with parent education as the only SES indicator (Model 2) showed a non-significant omnibus test, though the model with household income as the only SES indicator (Model 3) showed a statistically significant inverse association with depressive symptoms. When both SES indicators were considered simultaneously (Model 4), non-

significant omnibus tests for each resulted and as indicated by the adjusted R^2 explained no additional variance. Among White adolescents, Models 2, 3, and 4 all evidenced an inverse association with the SES indicators and depressive symptoms, and for Model 4, the adjusted R^2 increased slightly with the inclusion of both SES indicators. Taken together, it seems that the SES variables better predicted depressive symptoms for Whites than Blacks. However, while the data in Tables 3a and 3b suggest a trend toward race/ethnicity interacting with the SES indicators, these interactions did not reach significance when formally tested in analyses for Table 2.

Discussion

In this diverse group of adolescents, we examined whether low social status in the domains of gender, race/ethnicity, and SES predicted depressive symptoms and found that, while the association between female gender and increased depressive symptoms was robust and straightforward, the associations of race/ethnicity and SES with depressive symptoms were more complex. Black adolescents showed higher depressive symptoms than did their White counterparts and higher SES generally was associated with fewer depressive symptoms. These findings confirmed our first hypothesis: low social status markers predicted greater depressive symptoms and specifically girls, Blacks, and those with parents of lower SES each had elevated depressive symptoms. When we considered race/ethnicity and SES simultaneously the racial/ethnic difference in depressive symptoms became negligible, whereas lower SES still predicted higher depressive symptoms. These findings persisted whether SES was measured by parent education, household income, or both simultaneously. To better understand this pattern of results, we examined the data separately for Blacks and Whites. Visual inspection of those data suggested that Blacks gleaned less mental health benefit from greater SES than did Whites. Yet the race/ethnicity \times SES interaction term was not statistically significant. Thus support for our second hypothesis—that Blacks would benefit less than Whites from increases in SES—was not as robust as support for our first hypothesis.

Our findings are not entirely consistent with approaches suggesting health disadvantages accumulate such that each additional low status confers additively worse health outcomes (e.g., *double* and *triple jeopardy*; Cole, 2009; King, 1988). Rather, *intersectional* approaches—those that theorize how multiple axes of social status interactively produce outcomes (Bowleg, 2008; Cole, 2009; Cummings & Jackson, 2008; Purdie-Vaughns & Eibach, 2008; Warner, 2008)—could be useful to interpret our findings. Evidence of “health paradoxes” suggest that combinations of low status do not always yield poorer outcomes—and conversely, some advantages (e.g., relatively higher SES) might not accrue uniformly across groups (Jackson & Stewart, 2003; Jackson & Williams, 2006).

Some points in this vein should be made regarding our hypothesis that Blacks would benefit less than Whites from increases in SES. It might have been that there is no true interaction effect between race/ethnicity and SES, in which case the post-hoc exploratory analyses simply reflected greater variance that comes with smaller sample sizes resulting from stratification. On the other hand, it might be that there was a true interaction effect but it was too small to detect in the current study. In this case, findings would be consistent with previous studies (Cummings & Jackson, 2008; Jackson & Williams, 2006). For example, as parent education increases, Black teens gain smaller increases in perceived social status—a correlate of health outcomes—than do White teens (Goodman, Huang, Schafer-Kalkhoff, & Adler, 2007). Research in adults measuring other outcomes (e.g., self-assessed health) has shown that while higher SES generally confers better health, Blacks appear not to gain as much health benefit as do Whites (Cummings & Jackson, 2008). Analogous findings emerge

with infant mortality such that the most highly educated Black women have outcomes worse than White women with a high school education (Jackson & Williams, 2006).

A host of plausible mechanisms might account for the pattern of findings related to race/ethnicity and SES in predicting depressive symptoms. Stress is one potential explanatory mechanism. For example, upper SES Black youth might find themselves in social contexts in which they are the racial/ethnic minority; this sense of isolation could increase stress and negate the protective effect of greater SES (Goodman, McEwen, Dolan, et al., 2005). Upper SES Black youth might feel deleterious effects of “solo status” (i.e., being one of the only in their demographic; Thompson & Sekaquaptewa, 2002) through token stress and social rejection (Jackson & Stewart, 2003), which are parts of the “hidden costs of mobility” as Cole and Omari put it (Cole & Omari, 2003). They may not feel “Black enough” compared to lower SES Blacks but “too Black” compared to higher SES Whites (Jackson & Stewart, 2003) and as well may be subject to multiple sources of discrimination. Another mechanism worth further consideration is psychological identity, facets of which may amplify or buffer depressive symptoms (cf. Mahalingam & Jackson, 2007). It has been shown, for instance, that both the significance and meaning of racial identity and race-related hassles influence the mental health of Black adolescents (Sellers, Copeland-Linder, Martin, & Lewis, 2006).

Our data also indicated main effects for gender but not interactive effects with race/ethnicity. Previous research suggests some experiences of embodiment (Krieger, 2005)—for instance, body image (Grant et al., 1999)—might put Black females at particular risk relative to Black males. Yet ample research demonstrates that these experiences likely also tell us something about depressive symptoms among females more generally (Grabe & Hyde, 2006). Moreover all of the aforementioned mechanisms, whether related to gender, race/ethnicity, or SES, singly or in combination, are likely modified by larger contextual effects, such as neighborhood composition (Wight et al., 2005; Williams & Jackson, 2005).

We note some limitations. Race/ethnicity was based on school records rather than self report and SES was based on parent reports of highest parent education and household income; each of these might have resulted in misclassification. As a school-based study, our examination may not be representative of adolescents not attending school, such as those who have dropped out, are schooled at home, or are institutionalized. Our sample was limited to Blacks and Whites, and did not include other racial/ethnic groups from or outside the United States. Fewer Blacks than Whites were drawn from the originating sample, potentially resulting in selection bias and perhaps misestimating effects of race/ethnicity. If in fact there was a true interaction effect between race/ethnicity and SES, losing more Black than White participants to follow-up could have been not only an important loss of statistical power, but a key source of selection bias making it harder to detect such an effect (Kristman, Manno, & Côté, 2004). As a cross-sectional study, we could not assess the stability of this social patterning over time or make causal inferences. However, that gender, race/ethnicity, and parent SES precede the emergence of depressive symptoms make speculations that these social categories play a predictive or causal role reasonable to pursue in future research (Colditz, Sellers, & Trapido, 2006).

Additional limitations include weaknesses of each SES measure. A weakness of parent education is that knowing educational credentials or years of schooling does not shed light on the quality of that education. Still, compared to household income or wealth, highest parent education has important advantages as an indicator of SES. One is that it is easily reported: highest parent education is less subject to bias from both recall and social desirability. Another advantage is that it can apply to people not currently in the labor force (e.g., retired persons, homemakers) and does not fluctuate as much as other measures over the lifecourse (Krieger et al., 1997). Of course, because it does not fluctuate as much as

household income, parent education may not as readily capture dynamic processes like development of health and illness (Krieger et al., 1997). Moreover, though both highest parent education and household income are indicators of SES, they could be associated with depressive symptoms via different pathways. Whereas greater parent education may be associated with, for instance, resources like cultural capital and specific information relevant to wellness, household income may be associated with access to material goods including health insurance (Kawachi, Adler, & Dow, 2010). Measuring both ensured that we are tapping into SES more broadly than one measure alone could capture.

As well, this project has several key strengths. The data come from a community-based sample of youth, diverse on several important dimensions of social status. A notable contribution is that we examined both main and interactive effects among gender, race/ethnicity, and SES, and demonstrated that a complex patterning of low social status markers in these domains predicts depressive symptoms. We also accounted for age and pubertal status. Further, we used the CES-D, one of the most common self-report measures for depressive symptoms (Santor, Zuroff, Ramsay, Cervantes, & Palacios, 1995).

In sum, these data highlight the utility of including main and interactive effects of gender, race/ethnicity, and SES in studying the social determinants of depressive symptoms during adolescence. Depressive symptoms are a profound source of suffering among youth; additionally they may be a risk marker or factor for similar difficulties later in life (Copeland, Shanahan, Costello, & Angold, 2009; Johnson, Cohen, & Kasen, 2009; Weissman et al., 1999). Future research on the development of depressive symptoms should be powered to detect not only main effects of gender, race/ethnicity, and SES, but also their interactions. Differential associations of SES measures with depressive symptoms suggest that both parent education and household income should be measured in future research. As well, plausibly linked individual- and macro-level mechanisms linking low social status and depressive symptoms should be examined longitudinally with participants in the United States and elsewhere.

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References

- Bowleg L. When black + lesbian + woman = black lesbian woman: The methodological challenges of qualitative and quantitative intersectionality research. *Sex Roles*. 2008; 59(5):312–325.
- Casper RC, Belanoff J, Offer D. Gender differences, but no racial group differences, in self-reported psychiatric symptoms in adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry*. 1996; 35(4):500. [PubMed: 8919712]
- Chen Y, Subramanian SV, Acevedo-Garcia D, Kawachi I. Women's status and depressive symptoms: A multilevel analysis. *Social Science and Medicine*. 2005; 60(1):49–60. [PubMed: 15482866]
- Colditz GA, Sellers TA, Trapido E. Epidemiology - identifying the causes and preventability of cancer? *Nature Reviews Cancer*. 2006; 6(1):75–83.
- Cole ER, Omari SR. Race, class and the dilemmas of upward mobility for African Americans. *Journal of Social Issues*. 2003; 59(4):785–802.
- Cole ER. Intersectionality and research in psychology. *American Psychologist*. 2009; 64(3):170–180. [PubMed: 19348518]

- Copeland WE, Shanahan L, Costello EJ, Angold A. Childhood and adolescent psychiatric disorders as predictors of young adult disorders. *Archives of General Psychiatry*. 2009; 66(7):764–772. [PubMed: 19581568]
- Costello DM, Swendsen J, Rose JS, Dierker LC. Risk and protective factors associated with trajectories of depressed mood from adolescence to early adulthood. *Journal of Consulting and Clinical Psychology*. 2008; 76(2):173–183. [PubMed: 18377115]
- Costello EJ, Pine DS, Hammen C, March JS, Plotsky PM, Weissman MM, Leckman JF. Development and natural history of mood disorders. *Biological Psychiatry*. 2002; 52(6):529–542. [PubMed: 12361667]
- Cummings JL, Jackson PB. Race, gender, and SES disparities in self-assessed health, 1974–2004. *Research on Aging*. 2008; 30(2):137–168.
- Dolan LM, Bean J, D'Alessio D, Cohen RM, Morrison JA, Goodman E, Daniels SR. Frequency of abnormal carbohydrate metabolism and diabetes in a population-based screening of adolescents. *Journal of Pediatrics*. 2005; 146(6):751–758. [PubMed: 15973311]
- Franko DL, Striegel-Moore RH, Bean J, Barton BA, Biro F, Kraemer HC, Daniels SR. Self-reported symptoms of depression in late adolescence to early adulthood: A comparison of african-american and caucasian females. *Journal of Adolescent Health*. 2005; 37(6):526–529. [PubMed: 16310134]
- Gilman SE, Kawachi I, Fitzmaurice GM, Buka SL. Socioeconomic status in childhood and the lifetime risk of major depression. *International Journal of Epidemiology*. 2002; 31(2):359–367. [PubMed: 11980797]
- Gilman SE, Kawachi I, Fitzmaurice GM, Buka SL. Socio-economic status, family disruption and residential stability in childhood: Relation to onset, recurrence and remission of major depression. *Psychological Medicine*. 2003; 33(8):1341–1355. [PubMed: 14672243]
- Goodman E. The role of socioeconomic status gradients in explaining differences in US adolescents' health. *American Journal of Public Health*. 1999; 89(10):1522–1528. [PubMed: 10511834]
- Goodman E, Adler NE, Daniels SR, Morrison JA, Slap GB, Dolan LM. Impact of objective and subjective social status on obesity in a biracial cohort of adolescents. *Obesity Research*. 2003; 11(8):1018–1026. [PubMed: 12917508]
- Goodman E, Daniels SR, Dolan LM. Socioeconomic disparities in insulin resistance: Results from the princeton school district study. *Psychosomatic Medicine*. 2007; 69(1):61–67. [PubMed: 17167128]
- Goodman E, Huang B, Schafer-Kalkhoff T, Adler NE. Perceived socioeconomic status: A new type of identity that influences adolescents' self-rated health. *Journal of Adolescent Health*. 2007; 41(5): 479–487. [PubMed: 17950168]
- Goodman E, McEwen BS, Dolan LM, Schafer-Kalkhoff T, Adler NE. Social disadvantage and adolescent stress. *Journal of Adolescent Health*. 2005; 37(6):484–492. [PubMed: 16310126]
- Goodman E, McEwen BS, Huang B, Dolan LM, Adler NE. Social inequalities in biomarkers of cardiovascular risk in adolescence. *Psychosomatic Medicine*. 2005; 67(1):9–15. [PubMed: 15673618]
- Grabe S, Hyde JS. Ethnicity and body dissatisfaction among women in the united states: A meta-analysis. *Psychological Bulletin*. 2006; 132(4):622–640. [PubMed: 16822170]
- Graber JA, Lewinsohn PM, Seeley JR, Brooks-Gunn J. Is psychopathology associated with the timing of pubertal development? *Journal of the American Academy of Child & Adolescent Psychiatry*. 1997; 36(12):1768–1776. [PubMed: 9401339]
- Grant K, Lyons A, Landis D, Cho MH, Scudiero M, Reynolds L, Bryant H. Gender, body image, and depressive symptoms among low-income african american adolescents. *Journal of Social Issues*. 1999; 55(2):299–315.
- Inhorn MC, Whittle KL. Feminism meets the “new” epidemiologies: Toward an appraisal of antifeminist biases in epidemiological research on women's health. *Social Science and Medicine*. 2001; 53(5):553–567. [PubMed: 11478536]
- Jackson PB, Stewart QT. A research agenda for the black middle class: Work stress, survival strategies, and mental health. *Journal of Health and Social Behavior*. 2003; 44(3):442–455. [PubMed: 14582318]

- Jackson, PB.; Williams, DR. The intersection of race, gender, and SES: Health paradoxes. In: Schulz, AJ.; Mullings, L., editors. *Gender, race, class, and health: Intersectional approaches*. Jossey-Bass; San Francisco, CA US: 2006. p. 131-162.
- Johnson JG, Cohen P, Kasen S. Minor depression during adolescence and mental health outcomes during adulthood. *British Journal of Psychiatry*. 2009; 195(3):264–265. [PubMed: 19721119]
- Jun HJ, Subramanian SV, Gortmaker S, Kawachi I. A multilevel analysis of women's status and self-rated health in the united states. *Journal of the American Medical Women's Association*. 2004; 59(3):172–180.
- Kawachi I, Adler NE, Dow WH. Money, schooling, and health: Mechanisms and causal evidence. *Annals of the New York Academy of Sciences*. 2010; 1186:56–68. [PubMed: 20201868]
- Kawachi I, Daniels N, Robinson DE. Health disparities by race and class: Why both matter. *Health Affairs*. 2005; 24(2):343–352. [PubMed: 15757918]
- King DK. Multiple jeopardy, multiple consciousness: The context of a black feminist ideology. *Signs: Journal of Women in Culture and Society*. 1988; 14(1):42–72.
- Krieger N. Embodiment: A conceptual glossary for epidemiology. *Journal of Epidemiology and Community Health*. 2005; 59(5):350–355. [PubMed: 15831681]
- Krieger N, Rowley DL, Herman AA, Avery B, Phillips MT. Racism, sexism, and social class: Implications for studies of health, disease, and well-being. *American Journal of Preventive Medicine*. 1993; 9(6 Supplement):82–122. [PubMed: 8123288]
- Krieger N, Williams DR, Moss NE. Measuring social class in US public health research: Concepts, methodologies, and guidelines. *Annual Review of Public Health*. 1997; 18(1):341.
- Kristman V, Manno M, Côté P. Loss to follow-up in cohort studies: How much is too much? *European Journal of Epidemiology*. 2004; 19(8):751–760. [PubMed: 15469032]
- Mahalingam R, Jackson B. Idealized cultural beliefs about gender: Implications for mental health. *Social Psychiatry and Psychiatric Epidemiology*. 2007; 42(12):1012–1023. [PubMed: 17721667]
- McLeod JD, Owens TJ. Psychological well-being in the early life course: Variations by socioeconomic status, gender, and race/ethnicity. *Social Psychology Quarterly*. 2004; 67(3):257–278.
- Mendelson T, Kubzansky LD, Datta GD, Buka SL. Relation of female gender and low socioeconomic status to internalizing symptoms among adolescents: A case of double jeopardy? *Social Science and Medicine*. 2008; 66(6):1284–1296. [PubMed: 18248868]
- Nolen-Hoeksema S, Girgus JS. The emergence of gender differences in depression during adolescence. *Psychological Bulletin*. 1994; 115(3):424–443. [PubMed: 8016286]
- Osborne J. Notes on the use of data transformations. *Practical Assessment, Research & Evaluation*. 2002; 8(6) from <http://PAREonline.net/getvn.asp?v=8&n=6>.
- Perreira KM, Deeb-Sossa N, Harris KM, Bollen K. What are we measuring? an evaluation of the CES-D across race/ethnicity and immigrant generation. *Social Forces*. 2005; 83(4):1567–1602.
- Petersen AC, Compas BE, Brooks-Gunn J, Stemmler M, Ey S, Grant KE. Depression in adolescence. *American Psychologist*. 1993; 48(2):155–168. [PubMed: 8442570]
- Pumariega AJ, Johnson NP, Sheridan D, Cuffe SP. The influence of race and gender on depressive and substance abuse symptoms in high-risk adolescents. *Cultural Diversity and Mental Health*. 1996; 2(2):115–123. [PubMed: 9225567]
- Purdie-Vaughns V, Eibach RP. Intersectional invisibility: The distinctive advantages and disadvantages of multiple subordinate-group identities. *Sex Roles*. 2008; 59(5):377–391.
- Radloff LS. The use of the center for epidemiologic studies depression scale in adolescents and young adults. *Journal of Youth and Adolescence*. 1991; 20(2):149–166.
- Radloff LS. The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*. 1977; 1(3):385–401.
- Roberts RE, Roberts CR, Chen YR. Ethnocultural differences in prevalence of adolescent depression. *American Journal of Community Psychology*. 1997; 25(1):95–110. [PubMed: 9231998]
- Santor DA, Zuroff DC, Ramsay JO, Cervantes P, Palacios J. Examining scale discriminability in the BDI and CES-D as a function of depressive severity. *Psychological Assessment*. 1995; 7(2):131–139.

- Schraedley PK, Gotlib IH, Hayward C. Gender differences in correlates of depressive symptoms in adolescents. *Journal of Adolescent Health*. 1999; 25(2):98–108. [PubMed: 10447037]
- Sellers RM, Copeland-Linder N, Martin PP, Lewis RL. Racial identity matters: The relationship between racial discrimination and psychological functioning in african american adolescents. *Journal of Research on Adolescence*. 2006; 16(2):187–216.
- Siegel JM, Aneshensel CS, Taub B, Cantwell DP, Driscoll AK. Adolescent depressed mood in a multiethnic sample. *Journal of Youth and Adolescence*. 1998; 27(4):413–427.
- Takeuchi DT, Williams DR, Adair RK. Economic stress in the family and children's emotional and behavioral problems. *Journal of Marriage and Family*. 1991; 53(4):1031–1041.
- Thompson M, Sekaquaptewa D. When being different is detrimental: Solo status and the performance of women and racial minorities. *Analyses of Social Issues and Public Policy*. 2002; 2(1):183–203.
- Tracy M, Zimmerman FJ, Galea S, McCauley E, Vander Stoep A. What explains the relation between family poverty and childhood depressive symptoms? *Journal of Psychiatric Research*. 2008; 42(14):1163–1175. [PubMed: 18308337]
- Van Voorhees BW, Paunesku D, Kuwabara SA, Basu A, Gollan J, Hankin BL, Reinecke M. Protective and vulnerability factors predicting new-onset depressive episode in a representative of U.S. adolescents. *Journal of Adolescent Health*. 2008; 42(6):605–616. [PubMed: 18486870]
- Walsemann KM, Gee GC, Geronimus AT. Ethnic differences in trajectories of depressive symptoms: Disadvantage in family background, high school experiences, and adult characteristics. *Journal of Health and Social Behavior*. 2009; 50(1):82–98. [PubMed: 19413136]
- Warner LR. A best practices guide to intersectional approaches in psychological research. *Sex Roles*. 2008; 59(5):454–463.
- Weissman MM, Wolk S, Goldstein RB, Moreau D, Adams P, Greenwald S, Wickramaratne P. Depressed adolescents grown up. *Journal of the American Medical Association*. 1999; 281(18):1707–1713. [PubMed: 10328070]
- Wight RG, Aneshensel CS, Botticello AL, Sepulveda JE. A multilevel analysis of ethnic variation in depressive symptoms among adolescents in the United States. *Social Science and Medicine*. 2005; 60(9):2073–2084. [PubMed: 15743655]
- Williams DR, Jackson PB. Social sources of racial disparities in health. *Health Affairs*. 2005; 24(2):325–334. [PubMed: 15757915]

Table 1
 Characteristics of the Study Sample and Their Association With Depressive Symptoms

Variable	Depressive Symptoms			
	n	%	Mean (SD)	Range
Gender				
Female	637	50.4	15.2 (9.2)	0.0 - 59.0
Male	626	49.6	12.5 (7.4)	0.0 - 47.0
Race/ethnicity				.026
Black	580	45.9	14.4 (8.4)	0.0 - 59.0
White	683	54.1	13.4 (8.5)	0.0 - 50.0
Socioeconomic Status (SES)				<.001
Highest Parent Education				
High school, GED, or Less	303	24.0	15.7 (8.8)	1.0 - 48.0
Some college or trade school post hs	356	28.2	14.2 (8.1)	0.0 - 49.0
College graduate	335	26.5	13.6 (8.9)	0.0 - 59.0
Professional degree	269	21.3	11.6 (7.5)	0.0 - 35.0
Household Income				<.001
Less than \$25,000	262	20.7	14.6 (8.3)	1.0 - 48.0
\$25,000 - \$49,000	315	24.9	15.0 (8.7)	1.0 - 49.0
\$50,000 - \$74,000	267	21.1	14.4 (8.3)	1.0 - 47.0
\$75,000 - \$99,000	197	15.6	13.4 (8.8)	0.0 - 59.0
\$100,000 or more	222	17.6	11.0 (7.4)	0.0 - 39.0
Covariate				
Pubertal Status				.682
Pre- or peri-pubertal	456	36.1	13.7 (8.6)	0.0 - 50
Post-pubertal	807	63.9	13.9 (8.4)	0.0 - 59
Number of people in household				.100
1-3	336	26.6	13.8 (8.9)	1.0 - 59.0
4	421	33.3	13.1 (7.7)	0.0 - 47.0
5-9	416	32.9	14.3 (8.6)	0.0 - 50.0
Missing	90	7.1	15.2 (9.2)	1.0 - 39.1

Note. $N = 1,263$. P -values denote tests for differences within levels of a given variable on depressive symptoms. $hs =$ high school. Age (continuous, in years) was an additional covariate; its mean was 15.2 and standard deviation 1.6, ranging from 12.2 to 19.4. There was no correlation between age and depressive symptoms.

Table 2

Multivariable General Linear Models Predicting Depressive Symptoms

Predictor	Outcome = Depressive symptoms (log transformed CES-D score)				
	Model 1 B (SE)	Model 2 B (SE)	Model 3 B (SE)	Model 4 B (SE)	Model 5 B (SE)
Gender					
Female	.09 (.02) ***	.09 (.02) ***	.09 (.02) ***	.09 (.02) ***	.09 (.02) ***
Race/ethnicity					
Black	--	.05 (.02) **	.02 (.02)	.02 (.02)	.02 (.02)
Socioeconomic Status					
Highest parent education	--	--	***	--	*
High school, GED, or less	--	--	.14 (.02) ***	--	.10 (.03) **
Some college	--	--	.09 (.02) ***	--	.04 (.03)
College	--	--	.07 (.02) **	--	.04 (.02)
Household income					
Less \$25,000	--	--	--	***	***
\$25,000 - \$49,000	--	--	--	.15 (.03) ***	.09 (.03) **
\$50,000 - \$75,000	--	--	--	.15 (.03) ***	.11 (.03) ***
\$75,000 - \$100,000	--	--	--	.14 (.03) ***	.12 (.03) ***
Adjusted R ²	.022	.029	.055	.070	.077

Note: Reference categories are: for *Gender*, Male; *Race/ethnicity*, White; *Socioeconomic Status* – *Highest parent education*, Professional degree; *Socioeconomic Status* – *Income*, More than \$100,000. All models are adjusted for age and pubertal status. Models with household income are additionally adjusted for the number of people living in the participant's household. All interactions among predictor variables in Models 3-5 were tested, respectively; none were significant (data not shown). *Some college* also includes trade school post high school. Asterisks in *Highest parent education* and *Household income* rows refer to the significance level for the overall test of the given variable.

* $p < .05$,

** $p < .01$,

*** $p < .001$

Table 3a

Multivariable General Linear Models Predicting Depressive Symptoms – Blacks

Predictor	Outcome = Depressive symptoms (log transformed CES-D score)			
	Model 1 B (SE)	Model 2 B (SE)	Model 3 B (SE)	Model 4 B (SE)
Gender				
Female	.08 (.02) ***	.08 (.02) ***	.10 (.02) ***	.10 (.02) ***
Socioeconomic Status				
Highest parent education	--	<i>ns</i>	--	<i>ns</i>
High school, GED, or less	--	.08 (.04) *	--	.07 (.04)
Some college	--	.07 (.04)	--	.05 (.04)
College	--	.05 (.04)	--	.03 (.04)
Household income				
Less \$25,000	--	--	.12 (.04) **	.09 (.05)
\$25,000 - \$49,000	--	--	.12 (.04) **	.10 (.05) *
\$50,000 - \$75,000	--	--	.14 (.05) **	.13 (.05) **
\$75,000 - \$100,000	--	--	.08 (.05)	.08 (.05)
Adjusted R ²	.022	.027	.050	.049

Note: Reference categories are: for *Gender*, Male; *Race/ethnicity*, White; *Socioeconomic Status – Highest parent education*, Professional degree; *Socioeconomic Status – Income*, More than \$100,000. All models are adjusted for age and pubertal status. Models with household income are additionally adjusted for the number of people living in the participant's household. All interactions among predictor variables in Models 2-4 were tested, respectively; none were significant (data not shown). "Some college" also includes trade school post high school. *ns* = not significant. The designation in the *Highest parent education* and *Household income* rows refers to the overall test for the given variable.

*
 $p < .05$,

**
 $p < .01$,

 $p < .001$

Table 3b

Multivariable General Linear Models Predicting Depressive Symptoms – Whites

Predictor	Outcome = Depressive symptoms (log transformed CES-D score)			
	Model 1 B (SE)	Model 2 B (SE)	Model 3 B (SE)	Model 4 B (SE)
Gender				
Female	.09 (.02) **	.09 (.02) **	.09 (.02) **	.09 (.02) **
Socioeconomic Status				
Highest parent education	--	**	--	*
High school, GED, or less	--	.18 (.03) **	--	.12 (.04) *
Some college	--	.10 (.03) *	--	.04 (.04)
College	--	.07 (.03) *	--	.03 (.03)
Household income	--	--	**	*
Less \$25,000	--	--	.21 (.05) **	.14 (.05) *
\$25,000 - \$49,000	--	--	.17 (.03) **	.11 (.04) *
\$50,000 - \$75,000	--	--	.14 (.03) **	.11 (.04) *
\$75,000 - \$100,000	--	--	.09 (.03) *	.06 (.04)
Adjusted R ²	.021	.065	.071	.079

Note: Reference categories are: for *Gender*, Male; *Race/ethnicity*, White; *Socioeconomic Status – Highest parent education*, Professional degree; *Socioeconomic Status – Income*, More than \$100,000. All models are adjusted for age and pubertal status. Models with household income are additionally adjusted for the number of people living in the participant's household. All interactions among predictor variables in Models 2–4 were tested, respectively; none were significant (data not shown). "Some college" also includes trade school post high school. Asterisks in *Highest parent education* and *Household income* rows refer to the significance level for the overall test of the given variable.

*
 $p < .05$,

**
 $p < .01$,

 $p < .001$