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Socioeconomic Differences in Adolescent Stress: The Role of Psychological Resources

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Abstract

Purpose—Lower socioeconomic status (SES) is associated with greater stress and worse adolescent health, but whether lower SES youth have fewer psychological resources to manage stress is unknown. This study investigated whether psychological resources influenced the association between parent education (PE), a marker of SES, and perceived stress

Methods—Cross-sectional analyses were conducted in a sample of 1167 non-Hispanic black and white junior and senior high school students from a Midwestern public school district in 2002–2003. Hierarchical multivariable regression analyses examined relationships between PE (high school graduate or less=E1, >high school, <college=E2, college graduate=E3, and professional degree=E4), and psychological resources (optimism and coping style) on teens' perceived stress. Greater optimism and adaptive coping were hypothesized to influence (i.e. mediate or moderate) the relationship between higher PE and lower stress.

Results—Relative to adolescents from families with a professionally educated parent, adolescents with lower parent education had higher perceived stress (E3 $\beta=1.70$, $p<0.01$, E2 $\beta=1.94$, $p<0.01$, E1 $\beta=3.19$, $p<0.0001$). Both psychological resources were associated with stress: higher optimism ($\beta=-0.58$, $p<0.0001$) and engagement coping ($\beta=-0.19$, $p<0.0001$) were associated with less stress and higher disengagement coping was associated with more stress ($\beta=0.09$, $p<0.01$). Adding optimism to the regression model attenuated the effect of SES by nearly 30%, suggesting that optimism partially mediates the inverse SES-stress relationship. Mediation was confirmed using a Sobel test ($p<0.01$).

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Conclusion—Adolescents from families with lower parent education are less optimistic than teens from more educated families. This pessimism may be a mechanism through which lower SES increases stress in adolescence.

Keywords

Socioeconomic Status; Adolescent; Stress; Coping; Optimism

Social disadvantage is associated with increased stress among adolescents and worse health [1]. Numerous studies have documented the challenges that lower socioeconomic status (SES) youth confront in their lives [2–4]. Recent work suggests that the relationship between SES and stress is present throughout the socioeconomic gradient [1]. One explanation for this pattern is that individuals lower down the SES ladder have fewer psychological resources for meeting the stress of the increasingly more challenging environment experienced as SES decreases. Because psychological resources are traits and abilities people draw upon to withstand threats in their environment [5], this resource scarcity may negatively impact physical and psychological well-being. Gallo and Matthews have suggested that the relative lack of resources could be due to interrupted development of coping resources or depletion with lack of replenishment of other existing resources [6]. To date, few studies have addressed the “reserve capacity” hypothesis among teens [6,7], despite the fact that adolescence is a critical developmental period in which psychological and behavioral patterns are formed and then carried forward into adulthood.

Although coping style is central to the reserve capacity hypothesis [6,8], assessing coping among adolescents is problematic. Most coping instruments have been developed in higher SES, non-Hispanic white samples [9]. The dearth of research investigating scales in diverse populations is an important gap in the literature as existing scales may not be sensitive to the types of stressors, such as economic instability and racism, which affect socially disadvantaged youth [3,10]. Additionally, the conceptualization of coping styles is inconsistent between studies. Some researchers rely on empirical methods, such as exploratory factor analysis, to classify coping styles, while others employ a theoretical approach [11]. One widely used theoretical model that has been applied to the measurement of adolescent coping distinguishes between “engagement coping” and “disengagement coping” [9,12,13]. Engagement coping involves coping responses that acknowledge stressful thoughts and emotions, while disengagement coping involves responses which are oriented away from thoughts and emotions. Engagement coping is viewed as more adaptive because stressors are dealt with directly. While both empirical and theoretical approaches have been applied in the literature, few studies compare these two different means for conceptualizing coping.

As with coping, there is continued debate about the conceptualization and measurement of stress in adolescent research [14]. Two major research traditions in the stress field are the “environmental” and “psychological” perspectives [15]. The environmental perspective emphasizes objective events and conditions associated with significant adaptive demands. In contrast, the psychological perspective focuses on individuals’ subjective evaluation of their abilities to cope with demands. This second approach emphasizes the subjective nature of stress, such that experiences are dependent on the degree to which individuals perceive environmental demands as challenging or threatening. The current study utilizes a psychological perspective, such that “stressors” are objective environmental events or conditions that place demands on individuals, and “stress” represents a person’s appraisal of these environmental conditions as threatening and taxing their psychological resources.

This study had two goals. First, we evaluated the psychometric properties of a widely used coping inventory—the Adolescent Coping Orientation for Problem Experiences (A-COPE)

[16]— in a racially and socioeconomically diverse sample of teens. Based on these results, two new subscales were developed for use in subsequent analyses. Second, we explored the “reserve capacity” hypothesis [6] among youth by assessing the degree to which coping and optimism, another psychological resource that influences well-being, account for socioeconomic differences in adolescents’ stress. Our model presumes that the level of stress people experience is a function of events in their environment, as well as the adequacy of their coping style, personality traits, such as optimism, and other factors [17]. It was hypothesized that higher SES adolescents would have healthier coping styles and higher optimism, which reflects greater reserves for responding to stress, and that this greater reserve capacity would be associated with decreased stress.

Methods

Procedure

This study utilized data from the Princeton School District Study, a longitudinal school-based cohort in Cincinnati, Ohio [1,18,19]. The sample was comprised of 6th – 12th graders attending the district’s junior high and high schools in 2001 – 2002, the baseline year of the study. Approval for the cohort study was received from the Institutional Review Boards at the participating University and local Children’s Hospital. Because the district student population was 94% non-Hispanic black and white, subjects from other racial/ethnic groups were excluded from analyses. Surveys were administered to students in Years 1–2 and to a parent at baseline only. Subjects were included in these analyses if they had complete information on the psychological measures and had information on parental educational attainment (n=1167). The psychometric analysis of the coping inventory was completed on a slightly larger sample (n=1367) that did not differ significantly by race, gender, or parental education.

Measures

Coping Style—In Year 2, adolescents’ coping style was assessed through responses to the A-COPE [16], a 54-item inventory that asks adolescents to indicate, using a five-point Likert scale, how often they use a specified coping behavior when they “face difficulties or feel tense”. These items were developed through structured interviews with samples of high-school students, followed by factor analysis with a sample of 467 students from middle to upper SES backgrounds that yielded the following 12 subscales [16]: 1) developing self-reliance, 2) developing social support, 3) solving family problems, 4) avoiding problems, 5) ventilating feelings, 6) seeking diversions, 7) seeking spiritual support, 8) investing in close friends, 9) seeking professional support, 10) engaging in demanding activities, 11) being humorous, and 12) relaxing.

Optimism—Optimism was measured using the Life Orientation Test (LOT) [20]. The LOT is a 12-item self-report measure that assesses generalized expectancies for positive versus negative outcomes occurring in one’s life. This scale has good internal consistency in this sample ($\alpha=0.70$) and has been validated in a diverse sample of adolescents [21]. Because optimism is considered a stable personality trait [20,22], it was measured only at baseline.

Perceived Stress—Perceived stress (Year 2) was assessed with the Perceived Stress Scale (PSS) [17], a 14 item Likert-type scale which assesses how unpredictable, uncontrollable, and overloaded respondents find their lives. This scale has shown to be valid and reliable in a sample of older adolescents [17]. Cronbach’s alpha in this sample was 0.76.

Socioeconomic Status—Parental education was used a marker for SES. This variable was assessed through a parent or guardian’s report of their own educational attainment as well as that of their current spouse or partner’s. Highest reported level was used in analyses. Analytic

categories were high school or less, some college or vocational training after high school, college graduate, and professional degree. Professional degree was used as the reference group in regression models.

Demographic Covariates—Date of birth, gender, and parent-identified race/ethnicity of the student (non-Hispanic black versus non-Hispanic white) were obtained from the school district.

Statistical Analysis

This first phase of these analyses examined the internal reliability of the original A-COPE subscales and attempted to replicate the factor structure from the original study. Cronbach's alphas were computed for the original subscales to examine the internal consistency in this sample. This was repeated in separate race, gender, and parental education subgroups to assess the within-group internal consistency of the original subscales.

Next, exploratory factor analysis with varimax rotation and forced 12-factor structure was performed in an attempt to replicate the original 12-factor model. This investigated whether, in this sample, the 54 items from the coping inventory loaded similarly onto 12 factors and explained the same amount of variance of the items' correlation matrix.

Because results of the psychometric analysis (see below) suggested that the A-COPE scales were not reliable across racial/ethnic and parental education groups, the “engagement” and “disengagement” coping theoretical framework was applied to the A-COPE items. Twenty-two items were *a priori* assigned to the engagement coping subscale and 23 items were assigned to the disengagement coping scale based on face validity. Psychometric properties of these new scales were then evaluated (see below).

To address the second aim, cross-sectional associations between parental education, psychological resources, and stress were investigated. Pearson correlation coefficients assessed associations among coping, optimism, stress, and age. Mean levels of each of the psychological variables were examined by parental education, race, and gender. T-tests were performed to determine whether there were differences by race and by gender. Analysis of variance (ANOVA) determined whether mean levels differed according to parental education. Tests of linear trend determined whether a gradient existed in these variables according to parental education. Tukey's post-hoc tests were used to identify the groups between which differences were significantly different.

Multivariable regression analyses using generalized estimating equations (GEE) were performed to determine independent associations. GEE enabled these analyses to account for the inclusion of siblings for 19.6% (n=184) of the 940 participating families [23]. Variables that were theoretically relevant or statistically significant at the 0.05 level in unadjusted analyses were added to the models using a hierarchical approach. Likelihood ratio tests were performed to compare models to those that included a subset of the variables being tested. The first model examined the demographic covariates. Parental education was then added to examine its effect adjusting for demographic factors. In subsequent models, the variables assessing psychological resources — optimism and coping— were each added separately. Baron and Kenny's method [24] was used to assess if coping and optimism mediated or moderated the association between parental education and perceived stress. To assess mediation, parent education was regressed on optimism; additionally, the change in the parameter estimate for parent education was examined when optimism was added to the full model. The Sobel test was conducted to determine whether the change in the effect was of the hypothesized mediator was significant. To assess moderation, 2-way and 3-way interaction terms were included in the regression models. Because significant interactions were observed

for gender and coping and for race and optimism, both gender-stratified and race-stratified regression analyses were also run. All statistical analyses were performed using SAS version 9.1 (SAS Institute, Cary, NC).

Results

Study participants were 45.6% black, and 50.0% female. The mean age was 16.0 years (SD=1.6) with a range from 12.2 to 20.1 years. Most (71.1%) were in high school. Parental education ranged as follows: high school or less 22.5%, more than high school but less than college graduate 28.4%, college graduate 27.4%, and professional degree beyond college 22.0%. A higher percentage of black subjects were in the lower education groups ($p<0.0001$): 29.1% of black youth having parents with a high school degree or less as compared to 16.9% among white youth, while 60.2% of white youth had parents with a college degree or greater as compared to 37.1% of black youth. Parent education did not differ by gender.

Aim 1: Psychometric Evaluation of the A-COPE

Test of Internal Consistency of the Original Coping Scales—In the overall sample, five of the 12 subscales had Cronbach's alphas below the 0.60 level (data not shown). The "seeking professional support" subscale had also performed below the 0.60 level in the original study. There was a lack of consistency across subgroups. For example, three subscales suggested higher parental education was associated with greater internal consistency. These were "solving family problems" (range: 0.63–0.74), "avoiding problems" (range: 0.35–0.49), and "engaging in demanding activity" (range: 0.58–0.72.)

Factor Analysis to Replicate the Original Subscales—The 12 identified factors accounted for less variance in the A-COPE items than those identified by Patterson and McCubbin [16] (53.7% vs. 60.1%). In addition, the original factor structure could not be replicated. However, four of the current factors resembled factors identified in the original study, including "seeking spiritual support" (factor 4), "seeking professional support" (factor 12), "being humorous" (factor 10), and "ventilating feelings" (factor 1).

Engagement and Disengagement Coping Scales—Items for each subscale were identified based on face validity. Total values for the engagement and disengagement coping scales were computed by summing across the individual items. Cronbach's alphas were computed for the full sample. The engagement coping scale demonstrated strong internal consistency ($\alpha=0.84$), but the disengagement coping scale did not ($\alpha=0.53$). Item-by-item analysis [25] revealed that the deletion of 10 items increased the Cronbach's alpha for this scales to 0.70. Stratification by race, gender, and level of parental education did not alter the internal consistency for either the engagement or disengagement coping scales. Given the stability of the psychometrics of these scales, they were used in all subsequent analyses with coping. Prior to use, the scales were standardized with a mean of 50 and standard deviation of 10 to facilitate comparison.

Aim 2: Role of Psychological Resources in the Parent Education-Perceived Stress Relationship

Table 1 presents distributions of psychological resources and stress. Non-Hispanic whites had significantly higher levels of optimism than non-Hispanic blacks ($p<0.01$); in contrast, non-Hispanic blacks had significantly higher levels of both types of coping— engagement coping ($p<0.0001$) and disengagement coping ($p<0.0001$) and higher perceived stress ($p<0.05$) compared to non-Hispanic whites. Females had higher levels of engagement coping ($p<0.05$) and more perceived stress ($p<0.01$) than males. With respect to parental education, higher parental education was associated with greater optimism ($p<0.0001$) and less perceived stress

($p < 0.0001$). Although levels of engagement coping did not vary with parental education, there was a significant inverse association between parental education and disengagement coping ($p < 0.05$). In addition, psychological variables were correlated. Stress was inversely correlated with engagement coping ($r = -0.16$, $p < 0.01$) and optimism ($r = -0.32$, $p < 0.0001$). A strong positive correlation was observed between engagement coping and disengagement coping ($r = 0.58$, $p < 0.0001$). While a weak correlation was observed between engagement coping and optimism ($r = 0.19$, $p < 0.0001$), optimism and disengagement coping were not correlated.

Table 2 presents results from the multivariable linear regression models examining the relationships between parent education, psychological resources, and perceived stress. Higher parent education was associated with decreased perceived stress (Model 2). Engagement coping was inversely associated and disengagement coping positively associated with perceived stress in Model 3. However, their addition to the model caused little change in the effect of parental education. This suggests that coping does not mediate the relationship between parent education and stress. Furthermore, no interaction was noted between education and coping, indicating that coping did not moderate the influence of parent education on stress. Therefore, the effect of parent education on stress appears independent of coping style.

In contrast, there was evidence that optimism mediates the relationship between parental education and stress. Higher optimism was associated with less stress. Because, in a separate model not shown, parental education was significantly associated with optimism (HS grad or less: $\beta = -1.84$, $p < 0.0001$; some college: $\beta = -1.56$, $p < 0.0001$; College grad: $\beta = -1.04$, $p < 0.001$), the approximately 30% decrease in regression coefficients for PE with addition of optimism (Model 4) suggests mediation. Results from the Sobel test confirmed this for the HS grad or less category ($p < 0.01$), while the attenuating effects of some college and college grad were suggestive ($p = 0.09$ for both). There was no significant interaction between parental education and optimism. However, a significant race by optimism interaction was noted ($p < 0.05$, analyses not shown), indicating that the inverse effect of optimism on stress was lower 0.23 lower among blacks relative to whites. Inclusion of all psychological variables (Model 5) showed little change in the relationships noted in models 3 – 4, indicating that coping style and optimism are independently related to stress. Evaluation of the sequence of models using the likelihood ratio test determined parental education, optimism, and coping are independent predictors of stress after adjusting demographic characteristics ($p < 0.0001$).

Because there was a significant race by optimism interaction, we present race-stratified analyses in Table 3. The effect of optimism is stronger among whites ($\beta = -0.69$) compared to blacks ($\beta = -0.43$ black). This difference remained with adjustment for coping style. Although the optimism by black interaction was significant only among females, no 3-way interaction between race, gender, and optimism was noted in the full sample.

A second interaction was also noted between gender and engagement coping ($p < 0.0001$, analyses not shown). Table 4 presents gender-stratified models which demonstrate this effect. The influence of engagement coping on stress is stronger for females compared to males ($\beta = -0.27$ female, and $\beta = -0.10$ male). With adjustment for optimism, engagement coping lost significance among males, but remained significant among females. Thus, the effect of engagement coping on stress was present only for females in fully adjusted models.

Discussion

This study provides evidence that optimism, a psychological trait, partially mediates the association between parental education and perceived stress among teens, particularly for white youth. Although coping style did not influence the parental education-stress association, the findings vis-à-vis optimism supports the “reserve capacity” hypothesis. [6] In addition, these

data indicate that coping, which is complicated to measure across diverse samples, may be particularly salient for adolescent girls' response to stress.

Optimism has been described as the expectation that “good things, rather than bad things, will happen.” (p.212)[8] Among teens, higher levels of optimism has been associated with better mental health and less involvement in risky behaviors [26–29]. Optimism has also been associated with improved physical health among adults [30,31]. Although past research has documented the SES-stress relation in youth, and SES-optimism relationship [28,32], how and if optimism functions in creating the SES gradient in stress had not been previously explored. The present study suggests that youth who grow up in lower SES households are less optimistic. These analyses suggest that lower levels of optimism among youth from less well educated families may underlie the SES gradient in teens' stress. Moreover, this study found that optimism explains more of the SES-stress relation among whites relative to blacks. Because the LOT, unlike the A-COPE, has been validated in a diverse sample of youth [21], it is likely that these differences are true differences, and not an artifact related to measurement.

In contrast to optimism, which may link lower parent education and higher stress, coping's relationship to stress appeared unrelated to the SES-stress gradient. There was no association between engagement coping and parent education but higher parent education was associated with lower levels of disengagement coping. However, this form of coping was not related to teens' stress levels. Because many of the items in the disengagement coping dimension represent “unhealthy behaviors”, these findings could be capturing SES differences in such behaviors, which have been established in previous studies [33,34]. Unlike disengagement coping, higher engagement coping was associated with lower stress, which suggests, as shown in other studies, that this type of coping is associated with improved psychological well-being [9,35]. Additionally, the magnitude of the association is consistent with prior work suggesting that the protective effects of this more active form of coping are small and account for a modest amount of variance in youth's psychological functioning [35]. Finally, engagement coping and disengagement coping were positively correlated in this study. This finding suggests that some youth use several approaches to coping with stress, while others cope very little, which is consistent with previous work suggesting that the use of disengagement coping in high stress contexts may be an adaptive response when circumstances are not modifiable [36,37].

Lastly, this study suggests that an adolescent-specific coping inventory—the A-COPE—does not function well in a diverse sample of adolescents. Previous studies have used this instrument with lower SES [38] and minority youth [38–40], but no study to our knowledge has examined the psychometric quality of this instrument across population subgroups. Our findings suggest that the 12 subscales may not be generalizable beyond the samples of high SES, white youth, and that studies of other cohorts should use the 12-subscale structure with caution. We present alternative subscale construction which had better and more consistent psychometric properties for use in such samples.

This study has a number of limitations. First, because the analyses were cross-sectional, it is not possible to draw conclusions about the directionality of the observed associations. It is plausible that greater levels of stress could lead to negative expectations for the future, less adaptive coping styles, and greater use of engagement or disengagement coping. However, parent education, which is not likely to change, preceded coping, optimism, and stress. These analyses examined only parental education as a marker of SES, which is a multi-faceted construct. A different association might have been observed if a different measure of SES, such as family income or wealth, had been used. Finally, these analyses were conducted within a single sample, and our findings may not generalize to other samples. Future work should be conducted in additional samples of teens from diverse backgrounds in order to confirm the generalizability of these findings.

Despite these limitations, this study makes an important contribution to the literature, addressing the need for research that examines the potential mediating role of psychosocial factors in the relation between SES and health-related outcomes in a diverse sample of youth [6]. The findings suggest that lower SES youth have fewer psychological resources for managing stress and that optimism may be an important factor explaining why they experience greater stress. Further research is needed to clarify the process by which optimism develops and the exact mechanisms through which socioeconomic disadvantage influences optimism.

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Table 1
Psychological Resources and Perceived Stress by Race, Gender, Parental Education

	N	Optimism			Engagement Coping			Disengagement Coping			Perceived Stress		
		Mean	S.D.	P	Mean	S.D.	P	Mean	S.D.	P	Mean	S.D.	P
Overall	1167	19.1	3.9	-	50.0	10.0	-	50.0	10.0	-	24.8	7.2	-
Race													
White	635	19.3	4.0	<0.05	48.2	9.9	<0.0001	47.7	9.5	<0.0001	24.4	7.6	<0.05
Black	532	18.9	3.7		52.2	9.7		52.7	9.9		25.4	6.6	
Gender													
Male	583	19.0	3.7	NS	49.4	9.9	<0.05	50.2	10.3	NS	23.8	6.6	<0.0001
Female	584	19.3	4.1		50.6	10.1		49.8	9.7		26.1	7.5	
Parental Education													
HS graduate or less	262	18.4	3.4	<0.001	49.6	10.0	NS	50.8	10.1	<0.05	26.3	6.0	<0.0001
> high school,	331	18.7	3.6		50.1	9.3		50.2	9.9		25.1	6.7	
<college													
College graduate	320	19.2	4.1		50.7	10.8		50.3	9.9		24.7	7.4	
Professional degree	254	20.3	4.2		49.5	10.0		48.4	10.0		23.0	7.9	

HS=high school; SD=standard deviation

Post-hoc tests for the ANOVA of optimism by parent education indicated that the significant differences lay between the following categories: professional degree and college graduate; professional degree and > high school, <college; professional degree and HS grad or less; and college graduate and HS grad or less.

Post-hoc tests for the ANOVA of disengagement coping by parent education indicated that the significant differences lay between the professional degree and the remaining three groups.

Post-hoc tests for the ANOVA of perceived stress by parent education indicated that the significant differences lay between the professional degree and the remaining three groups, as well as college grad and HS grad or less.

Table 2
Main Effects Model of Parental Education and Psychological Resources to Stress (n=1167)

	Model 1 Beta (SE)	Model 2 Beta (SE)	Model 3 Beta (SE)	Model 4 Beta (SE)	Model 5 Beta (SE)
Total					
Age	-0.14 (0.13)	-0.10 (0.13)	0.02 (0.13)	0.04 (0.12)	0.10 (0.12)
Black	0.93 (0.42)*	0.43 (0.42)	0.80 (0.43)	0.40 (0.40)	0.65 (0.41)
Female	2.58 (0.41)***	2.65 (0.41)***	2.93 (0.43)***	2.82 (0.39)***	3.01 (0.39)***
Parental education					
HS graduate or less		3.19 (0.65)***	2.92 (0.63)***	2.15 (0.61)**	2.07 (0.61)**
> high school, <college		1.94 (0.63)**	1.80 (0.61)**	1.07 (0.59)	1.07 (0.58)
College graduate		1.70 (0.64)**	1.72 (0.61)*	1.11 (0.61)	1.19 (0.59)*
Professional degree					
Optimism				-0.58 (0.06)***	-0.52 (0.06)***
Engagement coping			-0.19 (0.03)***		-0.13 (0.03)***
Disengagement coping			0.09 (0.03)**		0.06 (0.03)*
Likelihood Ratio Test Statistic (DF)		25.95 (3)***	55.66 (2)***	122.96 (1)***	29.26 (2)***
Comparison Model		Model 1	Model 2	Model 3	Model 4

*** = p < 0.0001,

** = p < 0.01,

* = p < 0.05

HS=high school; SD=standard deviation; DF=degrees of freedom

Table 3
Effects of Parental Education and Psychological Resources on Stress Stratified By Race

	Model 1 Beta (SE)	Model 2 Beta (SE)	Model 3 Beta (SE)	Model 4 Beta (SE)	Model 5 Beta (SE)
Whites only					
Age	-0.07 (0.19)	-0.01 (0.18)	0.12 (0.18) *	-0.09 (0.17)	-0.15 (0.18)
Female	3.33 (0.59) ****	3.43 (0.58) ****	11.26 (3.00) ****	3.67 (0.54) ****	12.09 (2.91) **
Parental education					
HS graduate or less		3.41 (0.85) **	3.01 (0.83) **	1.93 (0.81)	1.85 (0.80) *
Some coll., no graduate		1.77 (0.82) *	1.61 (0.79) *	0.86 (0.75)	0.90 (0.74)
College graduate		1.56 (0.80)	1.29 (0.75)	0.88 (0.74)	0.81 (0.71)
Profess/graduate school		-	-	-	-
Optimism		-	-	-0.69 (0.08) ****	-0.60 (0.08) ****
Engagement coping			-0.16 (0.05) *		-0.06 (0.05)
Engagement coping Female *			-0.15 (0.06) **		-0.17 (0.06) **
Disengagement coping			0.11 (0.04) **		0.06 (0.04)
Likelihood Ratio Test Statistic (DF)		15.79 (3) **	53.90 (3) ****	94.02 (1) ****	30.70 (3) ****
Comparison Model		Model 1	Model 2	Model 3	Model 4
Blacks only					
Age	-0.24 (0.18)	-0.22 (0.19)	-0.13 (0.18)	-0.08 (0.18)	-0.02 (0.18)
Female	1.65 (0.58) **	1.64 (0.58) **	9.59 (3.26) **	1.76 (0.55) **	8.80 (3.22) **
Parental educ.					
HS grad or less		3.27 (0.97) **	3.22 (1.00) **	2.59 (1.01) *	2.63 (0.98) *
Some coll., no grad		2.31 (1.02) *	2.23 (0.98) *	1.64 (1.00)	1.67 (0.99) *
College grad		2.14 (1.07) *	2.39 (1.01) *	1.69 (1.05)	1.95 (0.99) *
Profess/grad school		-	-	-	-
Optimism		-	-	-0.43 (0.08) ****	-0.39 (0.08) ****
Engagement coping			-0.06 (0.05)		-0.04 (0.04) *
Engagement coping Female *			-0.15 (0.06) *		-0.13 (0.06) *
Disengagement coping			0.06 (0.04)		-0.06 (0.04)
Likelihood Ratio Test Statistic (DF)		11.29 (3) *	21.08 (3) **	31.21 (1) **	15.08 (3) **
Comparison Model		Model 1	Model 2	Model 2	Model 4

=p<0.0001,

**
= p<0.01,

*
= p<0.05

HS=high school; SD=standard deviation ; DF=degrees of freedom

Table 4
Effects of Parental Education and Psychological Resources on Stress Stratified By Gender

	Model 1 Beta (SE)	Model 2 Beta (SE)	Model 3 Beta (SE)	Model 4 Beta (SE)	Model 5 Beta (SE)
Males only					
Age	-0.30 (0.17)	-0.26 (0.16)	-0.18 (0.17)	-0.07 (0.15)	-0.03 (0.16)
Black	1.68 (0.55)*	1.17 (0.55)*	1.38 (0.59)*	0.67 (3.02)	-0.38 (2.99)
Parental education					
HS graduate or less		3.77 (0.82)***	3.61 (0.82)***	2.83 (0.82)**	2.79 (0.82)**
Some coll., no graduate		1.84 (0.82)*	1.79 (0.81)*	1.24 (0.78)	1.23 (0.78)
College graduate		1.66 (0.85)*	1.74 (0.84)*	1.45 (0.80)	1.48 (0.80)
Profess/graduate school					
Optimism				-0.61 (0.11)***	-0.59 (0.11)***
OptimismBlack*				0.10 (0.16)	-0.08 (0.15)
Engagement coping			-0.10 (0.04)*		-0.04 (0.04)
Disengagement coping			0.07 (0.04)		0.04 (0.04)
Likelihood Ratio Test Statistic (DF)		21.27 (3)***	9.20 (2)*	64.26 (2)***	2.11 (2)
Comparison Model		Model 1	Model 2	Model 2	Model 4
Females only					
Age	0.02 (0.21)	0.06 (0.20)	0.20 (0.19)	0.11 (0.20)	0.20 (0.19)
Black	0.15 (0.63)	-0.39 (0.65)	-0.08 (0.64)	-7.69 (2.95)	-6.93 (2.86)
Parental education					
HS grad or less		2.67 (0.99)**	2.33 (0.94)*	1.35 (0.94)	1.32 (0.91)
Some coll., no grad		2.20 (0.95)*	2.00 (0.90)	1.00 (0.88)	1.07 (0.86)
College grad		1.93 (0.96)*	1.86 (0.88)*	0.84 (0.91)	1.01 (0.86)
Profess/grad school		-	-	-	-
Optimism				-0.75 (0.11)***	-0.63 (0.11)***
OptimismBlack*				0.38 (0.15)*	0.35 (0.15)*
Engagement coping			-0.27 (0.04)***		-0.22 (0.04)*
Disengagement coping			0.09 (0.04)*		0.06 (0.04)*
Likelihood Ratio Test Statistic (DF)		9.15 (3)*	66.02 (2)***	58.24 (2)***	39.52 (2)***
Comparison Model		Model 1	Model 2	Model 2	Model 4

*** = p < 0.0001,

** = p < 0.01,

* = p < 0.05

HS=high school; SD=standard deviation ; DF=degrees of freedom