Variations in Links between Achievement and Health: Examining the School's Role in Buffering the Hidden Costs of Academic Success

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VARIATIONS IN LINKS BETWEEN ACHIEVEMENT AND HEALTH: EXAMINING THE SCHOOL'S ROLE IN BUFFERING THE HIDDEN COSTS OF ACADEMIC SUCCESS

Dissertation
by

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Submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy

May 2017

ABSTRACT

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Theories of upward mobility argue that academic and employment success grant individuals improved health, yet emerging evidence suggests that striving for such mobility in the context of marginalization may actually dysregulate physiological stress responses and compromise health. It is still unclear whether these associations operate as a function of cumulative exposure to risk (including both socioeconomic and racial/ethnic marginalization), or whether they would emerge outside of such collective risk. Further, little is known about how the school context, one of the most central contexts in adolescent development, affects associations between mobility and health, despite evidence that opportunities for socioeconomic comparisons or for discrimination at school may further exacerbate these associations.

Drawing on data from the National Longitudinal Study of Adolescent Health, a longitudinal survey of a nationally representative school-based sample of adolescents in the United States (N=14,797), the current study sought to clarify links between achievement and physiological health. Multilevel regression analyses considered prospective associations between achievement and health while attending to potential variation in links across the socioeconomic spectrum and across racial/ethnic groups. Additionally, school-level factors were taken into account and explored as potential augmenting mechanisms in these links. Findings suggested promotive links between

achievement and physiological health, but also suggested that such links were not shared broadly by all youth. Although links did not vary across the socioeconomic spectrum, Asian American youth demonstrated some greater health payoffs of achievement compared to their non-Hispanic White peers, while non-Hispanic Black and Mexican American youth largely experienced reversed links. These results suggest additional evidence that striving for academic achievement while experiencing racial/ethnic marginality may engender dysregulation of the stress-response system. Thus, findings are discussed in relation to the social and historical contexts that may contribute to such divergent links. However, the school-level factors considered did not moderate links among achievement, individual characteristics, and physiological health, pointing to the importance of future research considering alternate social and contextual mechanisms in these relationships.

ACKNOWLEDGEMENTS

Thank you to my committee, Dr. Rebekah Levine Coley, Dr. Stacey Doan, Dr. Jacqueline Lerner, and Dr. David Takeuchi, for sharing their invaluable time, guidance, and expertise with me during the dissertation process. I am especially grateful for Rebekah's support and contributions both as my mentor and as my dissertation chair. Rebekah, thank you for always championing and challenging your students, we are so fortunate to work with and learn from you.

Additionally, I am thankful for my friends and colleagues in the Applied Developmental and Educational Psychology program, particularly my cohort and the women in Rebekah's lab. Thank you for your friendship and support throughout graduate school (and for responding to pesky statistical inquiries at a moment's notice!).

I am also especially grateful for my family. My parents have selflessly supported me through every one of life's stages, and I have continued to rely on them immensely throughout the final stages of graduate school. Thank you for always providing me with a secure base and for your unwavering belief in me. I will also always be glad for my brothers' thoughtful support, whether in simply checking in and cheering on or by providing computer support from across the country. Lastly, I met my husband weeks into this graduate school adventure and I can't imagine any of the late nights or milestones without him—and his cooking—by my side. Thank you for feeding me, encouraging me, and helping me to recognize and celebrate my accomplishments along the way.

This research uses data from Add Health, a program project designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris, and funded by a grant P01-

HD31921 from the National Institute of Child Health and Human Development, with cooperative funding from 17 other agencies. Special acknowledgment is due to Ronald R. Rindfuss and Barbara Entwisle for assistance in the original design. Persons interested in obtaining data files from Add Health should contact Add Health, Carolina Population Center, 123 W. Franklin Street, Chapel Hill, NC 27516-2524 (addhealth@unc.edu).

Additionally, I am grateful to have received generous research support for this dissertation from Boston College's Lynch School of Education and the National Academy of Education/Spencer Foundation. The opinions reflected in this work are my own and do not necessarily reflect those of the funding agencies and institutions.

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CHAPTER 1: INTRODUCTION

In the United States, persistent health inequities exist across both socioeconomic strata and racial/ethnic groups (e.g., Braveman et al., 2010; Marmot, 2005). Economically disadvantaged adults are more likely to experience poor health and shorter life expectancies than their more advantaged peers (CDC, 2011), and a host of health concerns disproportionately affect members of racial/ethnic minority groups in the United States (Ong, Cheung, Man, Lau, & Lam, 2007; Ostchega, Yoon, Hughes, & Louis, 2008). These inequities represent pressing public health and policy concerns given both their inherent injustice (Braveman & Gruskin, 2003) as well as their economic cost: an estimated $300 billion a year to the U.S. economy (LaVeist, Gaskin, & Richard, 2009). As such, the U.S. Department of Health and Human services has made the narrowing of health disparities a national goal since the early 1990s (U.S. Department of Health and Human Services, 1991), with the stated goal of health equity, or the "attainment of the highest level of health for all people," in *Healthy People 2020* (U.S. Department of Health and Human Services, 2008). Despite such stated efforts, our understanding of health iniquities and the underlying mechanisms contributing to them is far from complete (Takeuchi & Williams, 2011; Williams, 2012).

Life course development theories suggest that such health inequities may be rooted in differential exposure to adversity that affects physiological functioning in part through the dysregulation of the hypothalamic-pituitary-adrenal axis (Dhabar, 2011; Elder et al., 2003; McEwen, 1998). This dysregulation compromises immune functioning

and confers long-lasting health risks to the individual (Dhabar, 2011; McEwen, 1998). As such, experiences of adversity—such as experiences of environmental insults or of discrimination—likely contribute to socioeconomic and racial/ethnic health inequities by repeatedly triggering the activation of stress processes among marginalized and disadvantaged members of our society (e.g., Evans, 2003; Geronimus et al., 2006; Pachter & García Coll, 2009; Williams, Neighbors, Jackson, 2003). Given the negative impacts of cumulative exposure to adversity, one of the most persistent proposed mechanisms for narrowing health inequities is upward social mobility, by which individuals are hypothesized to gain improved physical health as a function of greater accumulated resources, diminished exposure to adversity, and improvements in the built and social environments (Adler, 2013; Adler et al., 1994; Antonovsky, 1967; Cohen et al., 2010). In line with this perspective, positive associations between educational attainment and both physical and mental health have been well documented. College graduates, for example, have longer life expectancies than their peers who have not completed their high school education (CDC, 2011).

However, increased education and income do not always translate into improved physical health, and emerging research suggests that some racial/ethnic health inequities may actually be larger among the nonpoor than they are among the poor (Geronimus et al., 2006). Further, recent evidence suggests that for socioeconomically disadvantaged African American adolescents, demonstrating academic competence and self-control (key components of upward social mobility) in contexts of marginalization may actually exacerbate health inequities by repeatedly triggering physiological stress responses that compromise physical health (Brody et al., 2013; Chen, Miller, Brody, & Lei, 2014;

Miller, Yu, Chen, & Brody, 2015). Such findings point to the potential deleterious effects of the *cumulative* stresses that high-achieving, socially marginalized adolescents experience across the life course. These stresses include not only those associated with performing well in academic settings, but also doing so alongside experiences of poverty and discrimination, which have been independently associated with adverse physical health outcomes (e.g., Evans, 2003; Williams, Yu, Jackson, & Anderson, 1997). The underlying cost of "overcoming the odds," in other words, may be one's physical health.

Within this emerging line of inquiry, many questions remain. It is still unclear whether associations among achievement, marginalization, and health may extend to adolescents experiencing other degrees of marginalization, such as those with more economic resources or those belonging to other racial/ethnic groups. Additionally, the role of social contexts, such as the school, has yet to be fully considered in these associations. This is particularly important to consider given the wealth of research suggesting that school norms and characteristics may shape not only the academic performance of students, but also their trajectories of health and wellbeing (Benner, Crosnoe, & Eccles, 2015; Crosnoe, 2009; Fuller-Rowell & Doan, 2010; Lynch, Coley, Sims, Lombardi, & Mahalik, 2015).

In order to better understand the social determinants of enduring health inequities and to extend this emerging line of work, this dissertation research seeks to assess (1) prospective links between adolescent academic achievement and early adult physiological health, (2) whether these associations vary across individual socioeconomic strata or race/ethnicity, and finally (3) whether school socioeconomic characteristics or the pervasiveness of prejudice at schools exacerbate or buffer against these links. Results

may help to improve our understanding of socially determined health inequities as well as to delineate protective school-based mechanisms in relationships between marginalization, achievement, and health.

CHAPTER 2: LITERATURE REVIEW

Socially Determined Health Inequities

Since the 1990s, there has been increasing interest in understanding and narrowing health inequities in the United States, particularly those across socioeconomic strata and racial/ethnic groups, given their persistent and pervasive nature (Adler & Rehkopf, 2008). Evidence of an inverse association between socioeconomic status and health, for example, is robust across outcome and time (Williams & Collins, 1995). Further, a host of health concerns such as increased infant mortality rates, hypertension, diabetes, and cardiovascular disease disproportionately affect both African American and Latino populations in the U.S. (Ong et al., 2007; CDC, 2011), and Filipino Americans display higher hypertension prevalence rates than their White and other Asian American peers (Ostchega et al., 2008). Thus, this increasing interest in health inequities stems from both moral and economic concerns, given the persistent links between marginalization and poor health and their subsequent costs to U.S. society (Braveman & Gruskin, 2003; LaVeist et al., 2009).

Despite increasing interest, select inequities are widening rather than narrowing over time (Berkman, 2009). Although metabolic conditions such as obesity, hypertension, and diabetes are increasing broadly across the United States, analyses of time trends suggest that the steepest growth has occurred among the least educated in our country (Bleich, Jarlenski, Bell, & LaVeist, 2012). Further, socioeconomic inequities in

hypertension and diabetes rates have increased in recent decades, with the gap in prevalence widening between Americans without a high school diploma and their peers with at least some college education. Similar patterns have emerged between non-Hispanic Black and White Americans, with Black Americans demonstrating increasingly higher rates of hypertension than their White peers (Bleich et al., 2012). These widening gaps are not limited to cardiovascular risks, but extend to overall life expectancies as well; inequities in life expectancy across Black and White Americans have reportedly *grown* over the last several decades despite concerted efforts to narrow these gaps (Harper, Lynch, Burris, & Davey Smith, 2007; U.S. Department of Health and Human Services, 2008).

Such trends certainly suggest mounting moral and economic costs to our society (Braveman & Gruskin, 2003). However, these changes—coupled with significant variation in the magnitude of inequity depending on the health outcome of interest (Adler & Rehkopf, 2008)—also demonstrate the malleability of such inequities and the potential for policy efforts to reduce them when they, and their roots, are properly understood (Berkman, 2009).

Stress across the Life Course and Associated Inequities in Health

Life course development theories suggest that socioeconomic and racial/ethnic health inequities may be rooted in differential exposure to stress across the life course (Elder et al., 2003; Lynch & Smith, 2005). This exposure goes beyond that associated with acute stressors and instead considers the deleterious effects of cumulative stress, which may shift set points in the myriad systems involved in stress responses, such as the metabolic and cardiovascular systems, by affecting key areas of the brain involved in

functioning of the hypothalamic-pituitary-adrenal (HPA) axis (McEwen, 1998; McEwen & Gianaros, 2010). These shifts can be problematic and irreversible if they repeatedly tax and dysregulate the adaptive capacity of an individual by overactivating the HPA axis, which is programmed to restore homeostasis in times of stress by effectively curbing adaptive stress responses (Cohen, Kessler, & Gordon, 1997; Kyrou & Tsigos, 2009; McEwen & Seeman, 1999). This dysregulation of the HPA axis, in turn, compromises immune functioning and confers long-lasting health risks to the individual (Dhabar, 2011; McCormick & Mathews, 2007; Elder et al., 2003).

In addition to evidenced links between stress exposure and physical illness, including cardiovascular disease (Rozanski, Blumenthal, & Kaplan, 1999), there is increasing understanding of and interest in links between stress exposure and biomarkers of inflammation and risk, the intermediate risk factors associated with illness. These markers, such as C-reactive protein levels, Epstein-Barr virus antibody levels, and metabolic and cardiovascular risk factors including heightened blood pressure and obesity, are thought to be the pathways through which stress shapes health (Segerstrom & Miller, 2004). Given that these risk factors may appear earlier than many other physical manifestations of illness, they have the potential to aid in identifying stress response dysregulation and thus may be utilized to inform efforts aimed at redirecting trajectories of disease. As such, the Centers for Disease Control and Prevention and the American Heart Association have placed increased importance on recognizing and understanding inflammatory markers, such as C-reactive protein levels, as early health risk factors (Pearson et al., 2003).

In predicting both heightened biomarkers of dysregulation as well as disease itself, models of cumulative stress point to the importance of early developmental periods given that stress-susceptible regions of the brain have early windows of vulnerability (e.g. Andersen et al., 2008; Grant et al., 2003; Shonkoff, Boyce, & McEwen, 2009). Thus, some argue that adverse experiences may be particularly disruptive to stress responses if they occur early in life (Gunnar & Quevedo, 2007). Although much research has focused on the critical period of early childhood (e.g., Evans, 2003), there is growing work suggesting that the adolescent years, during which remarkable changes occur in the brain, also represent a critical period for the impact of stressors on physiological health (Lupien, McEwen, Gunnar, & Heim, 2009; McCormick & Mathews, 2007). This is particularly plausible given that the brain areas most susceptible to stress continue to mature during adolescence (Romeo, 2013). As such, there have been increasing calls for research considering the effects of stressors on the adolescent brain and functioning (e.g., Patton & Viner, 2007).

Transactional-Ecological Models of Stress Exposure

Transactional-ecological and contextual models of development argue that stress exposures and associated changes in physical health do not occur in a vacuum. Rather, such models posit that determinants of health occur as a function of bidirectional influences between individuals and the contexts in which they are embedded (Bronfenbrenner & Morris, 1998; Lerner, 1995; National Research Council, 2000; Sameroff & Chandler, 1975). Throughout development, individuals continually affect their environments as those environments in turn affect individuals, suggesting a person-in-context perspective on trajectories of health and achievement and highlighting the

importance of structural and interactive forces in the experience of stressors as well as the development of health inequities across the life course. Cultural-ecological models of development extend such transactional-ecological models in order to emphasize the explicit consideration of the opportunity structures available to children and adolescents as they develop. Such integrative models of development, for example, argue that the experience of subjective minority status based on race/ethnicity or socioeconomic status must be directly attended to when considering developmental trajectories and outcomes (e.g., García Coll et al., 1996; Spencer, Dupree, & Hartmann, 1997).

This increased emphasis on social position engenders the understanding that social forces provide unique inhibiting and promotive processes to individuals of color across the life course (García Coll et al., 1996). As such, the long-lasting effects of early stressors bear implications for socially determined health inequities given that such stressors do not occur at random, but rather as a function of contextual events and structures that can be biased or unequal in nature (Pearlin, 1989). Empirical evidence suggests that the distribution of stressors do, in fact, vary across contexts and systems, with low income individuals and members of racial/ethnic minority groups being more likely to experience stress exposures than their peers (e.g., Schulz et al., 2000; Sternthal, Slopen, & Williams, 2011). These disproportionate experiences of adversity, in turn, likely contribute to socioeconomic and racial/ethnic health inequities by repeatedly, and disproportionately, triggering the activation of stress processes among marginalized and disadvantaged members of our society (e.g., Geronimus et al., 2006).

In order to account for the role of such differential exposure to adversity, definitions of health inequities have been significantly expanded to consider their links

with social, economic, and/or environmental disadvantage at their core (U.S. Department of Health & Human Services, 2008). At the root of these expanded definitions is the notion that such inequities are avoidable and therefore are also unjust (Braveman & Gruskin, 2003; Whitehead, 1992). Thus, many public health researchers agree with transactional-ecological models of development that it is particularly important to consider the social and political context of race/ethnicity in the development of health inequities, as failing to do so may lead to mistaken assumptions regarding innate biological differences in health as well as a lack of appreciation for the multifaceted social determinants of health (Robillard, Annang, & Buchanan, 2015).

In line with transactional-ecological and cultural-ecological theories of development, the relationships among socioeconomic status, race, and health are far from constant across context. The direction and magnitude of these associations are instead shaped by both historical and cultural context (Kunitz, 2007). The magnitude of socioeconomic health inequities, for example, varies by country (Willson, 2009), and many racial/ethnic inequities in health have grown markedly over the last few decades (Berkman, 2009). These differences highlight the importance of considering contextual factors, such as political and social environments that may promote or inhibit marginalization and associated insults to healthy development, in health inequities. By utilizing such a person-in-context framework to explore the social determinants of health inequities, including poverty and experiences of racial/ethnic marginalization, the research base can answer increasing calls to better understand environmental-level factors—rather than focusing solely on individual factors—associated with health inequities (Bleich et al., 2012).

Health across the Social Gradient: Do Increases in Social Capital Translate into Improved Physical Health?

One commonly proposed mechanism for narrowing socially-determined health inequities is upward mobility, as individuals are hypothesized to gain improved health as a function of greater access to health-promoting resources as well as improvements in built and social environments (Adler, 2013). Despite evidence supporting such associations (e.g., CDC, 2011), a mounting body of work challenges this proposed linear relationship between socioeconomic status (SES) and health. Poulton and colleagues' (2002) examination of early SES deprivation and later health, for example, found little support for theories of upward mobility. Examining 1,000 individuals from birth through early adulthood, the authors found that upward mobility across the social gradient, operationalized as a comparison of an individual's occupational prestige to that of his or her parents, failed to consistently alleviate health risks of early SES disadvantage. As a possible explanation for these findings, the authors highlight the importance of considering the lasting effects of childhood stressors to potentially account for these persistent differences.

In addition to considering the lasting effects of childhood stressors, increasing work suggests that the *process* of striving for upward mobility itself may bear important health risks for individuals experiencing contextual marginalization. Specifically, doing so in the context of disadvantage may actually exacerbate health inequities by repeatedly triggering physiological stress responses that, in turn, compromise physical health and undermine the hypothesized health returns of such upwardly mobile "success" (Chen et al., 2014; Miller et al., 2015). In a study of African American adolescents from primarily working-poor families, self-control and self-regulation (important predictors of academic

and employment success) were associated with better psychosocial outcomes including lower rates of substance use and aggressive behavior. For the less disadvantaged adolescents in the study, self-control indices were also associated with slower (healthier) immune cell aging. For their more disadvantaged peers, however, this relationship was reversed: higher self-control was associated with more rapid epigenetic aging, a significant risk for higher mortality rates (Miller et al., 2015). These results suggest that striving for upward mobility in contexts of more severe economic disadvantage may confer hidden health costs as opposed to benefits, an important caveat in proposed associations between SES and health that challenges the prevailing view of the accumulation of resources as an equalizing process (Braveman & Gruskin, 2009).

Considering Race/Ethnicity in Models of Upward Mobility

In line with models highlighting the importance of considering race/ethnicity as a central factor in development (e.g., García Coll et al., 1996), other evidence has questioned whether the posited, positive relationship between SES and physical health is generalizable beyond White males (Pearson, 2008). Although socioeconomic status is an important factor in accounting for racial/ethnic inequities in health, inequities often remain even once socioeconomic status is controlled for (e.g., Williams & Collins, 1995) and race-based health inequities are evident even among higher SES levels (Colen et al., 2006). Further, some research suggests that racial/ethnic health inequities may actually be wider at higher levels of SES (Geronimus et al., 2006; Krieger, Rowley, Herman, Avery, & Phillips, 1993). Such results suggest the possibility of deleterious effects of striving for success in contexts of marginalization, given increasing rates of inflammation across the life course among nonpoor Black men and women such that they eventually demonstrate

higher odds of problematic inflammation than even their poor White peers (Geronimus et al., 2006). Recent examinations of African American adolescents experiencing high levels of SES-related risk provide additional support for this hypothesis. For example, in a recent prospective study of adolescents from high-poverty rural counties in Georgia, adolescents whose teachers rated them as having higher self-control as well as higher academic and social competence in early adolescence demonstrated, not surprisingly, lower rates of depressive symptoms and externalizing problems in later years (Brody et al., 2013). However, these same academically and socially competent youth also demonstrated worse physiological health in later adolescence compared to their less-competent peers. The authors argue that their worse physiological health may be a potential cost of their apparent resilience.

An ensuing study of the same cohort, recognizing the increasing importance of non-familial social contexts throughout adolescence, considered the role of neighborhood characteristics in associations between competence and physiological health (Chen et al., 2014). In this study, Chen and colleagues utilized college enrollment as an indicator of academic achievement and found significant differences in associations between achievement and young adult outcomes across neighborhood poverty levels. Although adolescents from higher-poverty neighborhoods who had enrolled in college demonstrated lower later rates of substance use, they also demonstrated worse physiological health when compared to their peers who had not enrolled in college or to their college-enrolled peers from neighborhoods with less concentrated poverty. The authors across these studies hypothesize that these unexpected associations may be driven by adolescents pushing themselves to succeed in the face of adversities, including both

economic stress as well as experiences of racism as a function of their membership in a traditionally marginalized group (Brody et al., 2013; Chen et al., 2014).

While these findings bear important implications for understanding health inequities among marginalized groups, a number of important considerations remain. Associations between self-control and epigenetic aging emerged among a group of SES-disadvantaged African American adolescents (Miller et al., 2015), while associations between academic competence and compromised physiological health emerged among African American adolescents experiencing both socioeconomic and racial/ethnic marginality (Brody et al., 2013; Chen et al., 2015). Evidence suggests that both SES disadvantage (e.g., Evans, 2003) as well as experiences of discrimination and marginalization (e.g., Hudson et al., 2013) may trigger increased activation of stress responses. As such, it is unclear whether associations between academic competence and physiological health in contexts of marginalization operate as a function of cumulative exposure to risk or whether these associations would emerge outside of these collective contexts of disadvantage. For example, would low-SES adolescents from more historically privileged racial/ethnic groups demonstrate similar costs of striving for success?

Contextual Influences on Associations among Achievement, Marginalization, and Health: Do Socioeconomic Characteristics and Prejudice at School Attenuate or Amplify Links?

Given the importance of social contexts (e.g., National Research Council, 2000) alongside the need to better understand contextual rather than solely individual contributions to health inequities (Bleich et al., 2012), it is also important to consider the role of such contexts in associations between achievement, marginalization, and health.

Yet the role of the environments in which such associations have emerged has not been extensively examined. Existing research documenting potential costs associated with demonstrating success in contexts of marginalization have been limited to African American samples experiencing similar levels of economic deprivation drawn from geographically homogenous locales in the U.S. South, making it difficult to discern how contexts may augment these associations (e.g., Brody et al., 2013; Chen et al., 2014; Miller et al., 2015). Even among these relatively homogeneous samples, however, evidence for the importance of context has emerged. Higher poverty neighborhoods, for example, interacted significantly with college attendance to predict worse physiological health (Chen et al., 2014). These findings, coupled with theoretical emphases on contexts of development, suggest that the social structures in which achievement, health, and marginalization are experienced must be carefully attended to and considered.

One of the most important contexts to consider—particularly for adolescents—is the school environment. Schools are essential, proximal contexts that shape social experiences and development in adolescence (Eccles et al., 1993), serve as potential resources to improve student affect (Li, Lerner, & Lerner, 2010), and also serve as the contexts in which academic achievement unfolds. A wealth of research has long suggested that the school climate has the potential to vary drastically, with schools providing differing degrees of trust and respect or, alternatively, mistrust and suspicion (Bryk & Schneider, 2002). Further, the latter of these school characteristics have been consistently linked with increased stress as well as decreased wellbeing and achievement among students. School climates characterized by poor trust, for example, are associated with increased physical and psychological health problems among students (Virtanen et

al., 2009), while those characterized by trust and support have been linked with better student psychological health and achievement (Brand, Felner, Seitsinger, Burns, & Bolton, 2008; Denny et al., 2011; Way, Reddy, & Rhodes, 2007).

The potential for deleterious effects of school climate may be particularly pronounced among disadvantaged students within schools. For example, according to social comparison theories, higher aggregate school SES may increase competition as well as opportunities for stigmatization and wealth-based social comparisons, particularly for students with fewer socioeconomic resources (Marsh & Hau, 2003). Utilizing propensity score weighting techniques to consider the psychosocial health and academic performance of low income students in the National Longitudinal Study of Adolescent Health, Crosnoe found evidence for deleterious effects of increasing school-wide family income on low-income students' outcomes (2009). Specifically, low-income students in more affluent schools generally progressed less far in math and science coursework, reported higher levels of isolation, and demonstrated more negative self-image than their peers in less affluent schools. These results suggest that for adolescents experiencing SES-related risk, a socioeconomic mismatch in the school context may engender heightened stress exposures and compromised developmental outcomes.

The pervasiveness of prejudice within schools, including experiences related to assumptions based on race/ethnicity or culture (Fisher, Wallace, & Fenton, 2000), can also be an important predictor of both health and academic achievement. Such experiences have been linked with a variety of health conditions (e.g., Brondolo, Rieppi, Kelly, & Gerin, 2003; Williams & Mohammed, 2009) as well as school-related performance (Benner & Kim, 2009; Smalls, White, Chavous, & Sellers, 2007), and are

frequently highlighted as critical explanations for why race is still a salient predictor of health outcomes across the socioeconomic spectrum (Williams, Priest, & Anderson, 2016). Although much research has focused on individual perceptions of prejudice and discrimination, recent work suggests that the pervasiveness of prejudice within a context, such as a school, may be a similarly important predictor of healthy development for students. In a recent examination of perceptions of prejudice in the National Longitudinal Study of Adolescent Health, school-wide levels of prejudice were inversely related to GPA, such that heightened school-wide perceived prejudice was associated with decreased GPA (Benner et al., 2015). This association held even when controlling for students' own perceptions of prejudice, highlighting the importance of considering larger contexts of development in these associations. While this examination considered the perceived prejudice of all students in a respective school, members of different racial/ethnic groups in America experience diverse degrees of prejudice and discrimination (e.g., Gee, Spencer, Chen, & Takeuchi, 2007), and members of racial/ethnic minority groups are more likely to experience discrimination than their peers (Krieger et al., 1993). Thus, to the extent that individuals identifying as different races or ethnicities may experience differential levels of prejudice, they may also report differential levels of prejudice in their school and be more or less vulnerable to the deleterious health effects of those experiences.

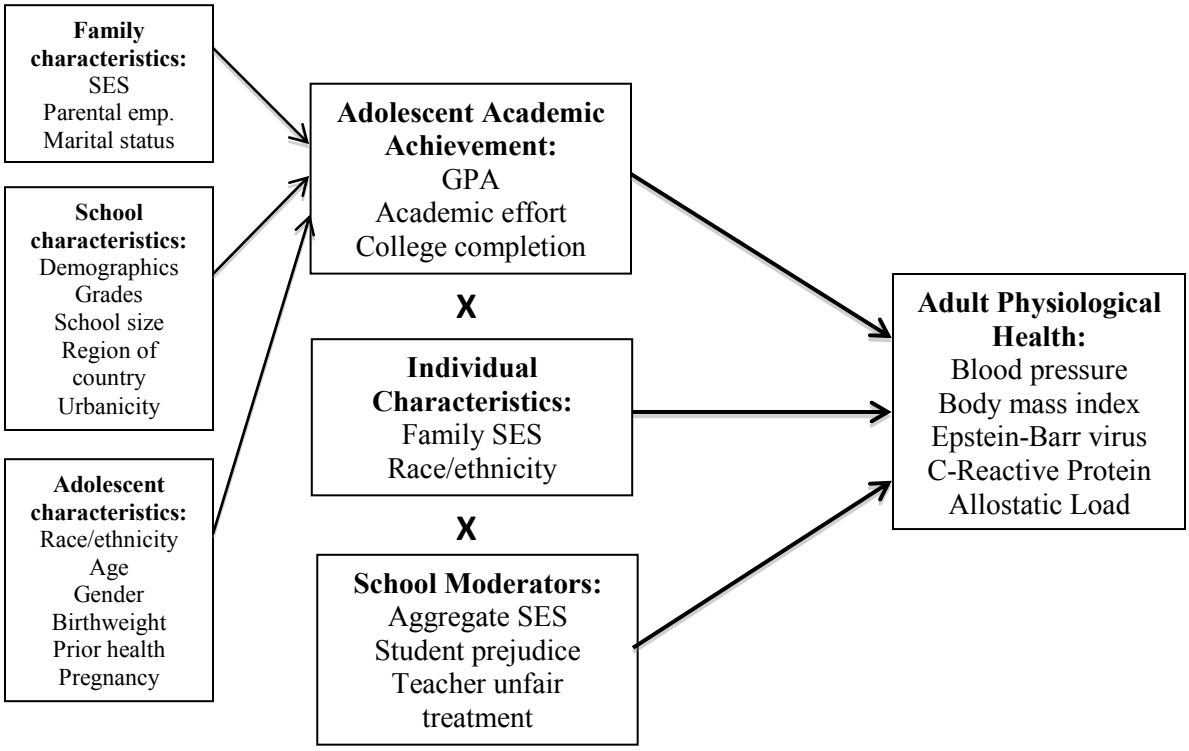
Given the important role that school factors—such as socioeconomic characteristics and the pervasiveness of prejudice—play in adolescent achievement, health, and wellbeing, it is imperative to integrate such school-based research with emerging work considering achievement in adolescence as a potential stressor. It is

plausible that both the process of striving for success as well as the social context in which this striving occurs may interact to predict later health. For example, for adolescents who experience SES disadvantage or who belong to marginalized racial/ethnic groups, greater opportunities for wealth-based social comparisons or for experiences of prejudice in the school may increase stress exposures and, in turn, further exacerbate the negative health repercussions of striving for academic success. Alternatively, schools with fewer opportunities for wealth-based social comparisons or with lower levels of prejudice may provide buffers against health stresses associated with achievement.

Conceptual Model and Research Objectives

The present research seeks to further our understanding of academic success as a context of stress by (1) examining its prospective association with health utilizing data drawn from a nationally representative sample; (2) considering whether these associations vary across either SES or race/ethnicity, and (3) assessing the attenuating, or exacerbating, role of the school context in these associations. Figure 1 on the following page presents this conceptual model, and additional information on specific research questions and hypotheses immediately follow.

Figure 1. Conceptual Model



Research Objective and Hypotheses

The first goal of this dissertation is to establish prospective associations between academic achievement and health.

Hypothesis 1. For this aim, it is expected that higher academic competence will be associated with improved later physiological health, given prior evidence linking academic competence with economic success which, in turn, has been linked with improved physical health (Adler, 2013; French, Homer, Popovici, & Robins, 2015; Kerckhoff, Raudenbush, & Glennire, 2001). However, given research suggesting that links between academic achievement and later health may vary by demographic factors (e.g., Brody et al., 2013; Miller et al., 2015), it is also

plausible that associations between achievement and health will be neutral, with cross-over interactions masking significant links between achievement and health.

The second aim of this research is to explore whether associations between academic achievement and physiological health vary across either (a) the socioeconomic spectrum or (b) racial/ethnic groups.

Hypothesis 2a. Given prior evidence suggesting that links between academic competence and health vary across income (Miller et al., 2015), it is hypothesized that greater socioeconomic status will amplify positive associations between achievement and health. Further, it is expected that adolescents with fewer socioeconomic resources will experience weakened or reversed associations between achievement and health, with achievement presaging less optimal physiological health as a function of increased stress in the context of socioeconomic disadvantage.

Hypothesis 2b. Based on findings that academic competence is associated with compromised physical health in African American samples (Brody et al., 2013; Chen et al., 2015; Miller et al., 2015), it is hypothesized that links between achievement and health will vary across racial/ethnic groups, such that academic achievement will be less beneficial for adolescents belonging to racial/ethnic minority groups as a function of stress exposures related to prejudice and discrimination.

The third and final goal of this research addresses the possibility that associations between academic achievement, individual characteristics, and physiological health will

be augmented by school characteristics, specifically (a) school-wide socioeconomic status or (b) prejudice and unfair treatment.

Hypothesis 3a. Drawing on social comparison theories and evidence suggesting heightened stress among low-SES adolescents in high-SES schools (Crosnoe, 2009; Marsh & Hau, 2003), it is hypothesized that when low family SES is concurrent with high school-wide SES, the health risks associated with academic achievement will be intensified. School-wide SES is not expected to moderate associations among adolescents who demonstrate positive associations between achievement and health.

Hypothesis 3b. Given the deleterious effects of school-wide prejudice, particularly among racial/ethnic minority students (Benner et al., 2015), it is hypothesized that when racial/ethnic minority status is coupled with high levels of school-wide prejudice and unfair treatment, the health risks associated with academic achievement will be further exacerbated. Schools with low levels of school-wide prejudice and unfair treatment, however, are hypothesized to act as buffering resources against these associations. School climate is not expected to augment associations among groups that exhibit positive associations between achievement and health.

CHAPTER 3: METHODS

Sampling and Data Collection

Data were drawn from the National Longitudinal Study of Adolescent Health (Add Health), a longitudinal survey of a nationally representative school-based sample of adolescents in the United States. From the baseline school sample (N=90,118), a stratified

sample of 7th through 12th graders was selected for in-home surveys (*N*=20,745). This sample was interviewed over 4 waves in 1995, 1996, 2001/2, and 2007/8, with response rates of 79%, 88%, 77%, and 80% respectively. In addition to individual interviews, Add Health contains a wealth of data from school administrator reports, parent interviews, and direct assessments. The present research drew on data from each of these sources, helping to reduce the potential confounding relationships between measures. The analytic sample for the current study included all participants in the in-home surveys with valid survey weights, school IDs, and physiological health measures at wave 4 (*N*=14,797), weighted to make the sample nationally representative.

Measures

Physiological health. Five individual biomarkers of health risk in adulthood were tested in separate models: (1) diastolic and (2) systolic blood pressure and (3) body mass index, which have been positively linked with increased risk for cardiovascular disease and higher mortality rates (Ezzati et al., 2008), as well as (4) Epstein-Barr virus antibodies and (5) C-reactive protein levels, which suggest suppressed immune function (Glaser & Kiecolt-Glaser, 2005). Each outcome was directly assessed at the wave 4 interview, when youth averaged 29 years, with higher values suggesting compromised physical health (e.g., Pepys et al., 2006). Additional analyses considered a measure of allostatic load (AL), which represents a more global measure of the chronic wear and tear experienced by the body in conditions of chronic stress by aggregating the previously discussed measures of physiological health (McEwen, 1998).

Blood pressure. Hypertension is a major risk factor for a variety of health concerns including stroke, heart failure, and cardiovascular disease (Ong et al., 2007).

Given that cardiovascular disease is a leading cause of death among U.S. adults (Hoyert & Xu, 2012), hypertension is increasingly targeted with public health interventions (Egan, Zhao, & Axon, 2010). Although most studies of hypertension consider mid-life levels, evidence suggests that inequities widen during young adulthood—indicating that this is a particularly important time to study its correlates (Liu et al., 1996).

The present analyses utilized direct assessments of blood pressure at wave 4 as an indicator of health risk. At wave 4, trained field interviewers measured diastolic and systolic blood pressure in millimeters of mercury (mmHg) utilizing a calibrated, Microlife BP3MC1-PC-IB osciliometric blood pressure monitor (Entzel et al., 2009). After 5-minutes of seated rest, three readings were taken from the right arm at 30-second intervals. The second and third of these readings were averaged and used in the present analyses. Blood pressure was considered continuously, with higher scores indicating greater health risk. Alternative model specifications also considered categorical measures of blood pressure, with hypertension defined as an average systolic blood pressure greater than or equal to 140 mmHg and an average diastolic blood pressure greater than or equal to 90 mmHg. All participants taking antihypertensive medication were retained in the sample, given that removing such cases is evidenced to introduce bias (Tobin, Sheehan, Scurrah, & Burton, 2005), and were coded to the minimum diagnostic criteria of hypertension (SBP≥140 mmHg, DBP≥90 mmHg). Participant self-report of their use of blood pressure lowering medications in the past 4 weeks during the in-home wave 4 interview was utilized to identify those individuals taking such antihypertensive medication. Specifically, those reporting taking an angiotensin converting enzyme inhibitor, angiotensin II inhibitor, antiadrenergic, beta-blocker, calcium channel blocker,

diuretic, vasodilator, or antihypertensive combination medication were considered as having used blood pressure lowering medications and were thus were coded to minimum diagnostic criteria (n = 452).

Body mass index. Obesity, which represents a chronic, low-grade inflammatory state that has the potential to disrupt various tissue and organ functions in the body (Hotamisligil, 2006), carries a host of health risks and is a major contributor to shorter life expectancy in the U.S. (Olshansky et al., 2005). Unfortunately, obesity rates continue to rapidly increase in the United States (Sturm & Hattori, 2013). At wave 4, respondents' height (in inches) and weight (in pounds) were directly assessed. Measurements were converted to meters and kilograms respectively, and BMI was calculated using the formula (weight in kilograms/[height in meters^2]). BMI was considered as a continuous measure, with higher scores indicating greater health risk. Additional models considered categorical delineations of obesity (with respondents categorized as normal weight (BMI <25), overweight (25≤ BMI <30), or obese (BMI ≥30) according to guidelines from the World Health Organization [World Health Organization, 2000]). However, given increasing interest in and evidence for race- and ethnicity-specific BMI cutoffs (Bell, Adair, & Popkin, 2002; World Health Organization, 2004) as well as concerns that BMI cutoffs miscategorize both cardiometabolically healthy and unhealthy individuals (Tomiyama, Hunger, Nguyen-Cuu, & Wells, 2016), continuous considerations of BMI are prioritized in the present research as opposed to such categorical delineations.

As an additional means of assuaging concerns over the validity of BMI as an indicator of metabolic risk, additional models considered waist-to-height (WHtR) as opposed to measures of body mass index. Emerging research suggests that WHtR may

provide a more accurate characterization of adiposity than measures of BMI (Ashwell, Gunn, & Gibson, 2010; Schneider et al., 2010). In addition to the direct assessments of height and weight previously described, the Wave 4 anthropometric measurements in Add Health also included waist circumference (in cm), which was measured to the nearest 0.5 cm at the superior border of the iliac crest. WHtR was calculated by dividing measures of waist circumference by height (both in cm).

Epstein-Barr virus antibodies. Given the mediating role of the immune system in associations between stress and illness (Segerstrom & Miller, 2004), IgG immune responses to herpesviruses, such as the Epstein-Barr virus (EBV), are often used to link stress exposure and immune function (Glaser et al., 1991). Although EBV remains in the body for life following infection, sufficient cell-mediated immune function maintains EBV in a latent state. In times of stress, weakened immune control may allow the virus to reactivate and lead to higher production of EBV antibodies (Glaser et al., 1991). Thus, higher EBV antibodies are often used as an indirect measure of cell-mediated immune function (e.g., Dowd, Palermo, Chyu, Adam, & McDade, 2014).

In the Add Health study, capillary blood samples via a finger stick assessed Epstein-Barr virus viral capsid antigen igG antibody levels during the wave 4 interview (Whitsel et al., 2012). The blood samples were collected on standardized filter paper, dried, and shipped to the University of Washington, Department of Laboratory Medicine for analysis utilizing a commercial ELISA kit. Only EBV seropositive respondents were included in analyses considering EBV, given that associations between stress experiences and herpesvirus antibody titers are dependent upon prior infection. In line with extant research and given the lack of guidance in the Add Health data regarding seropositivity

cut-offs, analyses considered the top 90% of antibody levels as seropositive (Dowd et al., 2014). Epstein-Barr virus antibodies were logarithmically transformed in order to normalize the distribution, and analyses considered antibodies continuously, with higher levels suggesting a failure of the immune system to regulate the virus.

C-reactive protein levels. Chronic inflammation is a clear risk factor for a variety of health concerns including cardiovascular disease and diabetes (Pepys et al., 2006; Pradhan, Manson, Rifai, Buring, & Ridker, 2001; Ridker, Cushman, Stampfer, Tracy, & Hennekens, 1997). C-reactive protein (CRP), produced by hepatocytes, is commonly used as a marker for such inflammation, as higher levels suggest abnormal functioning of stress response systems (Chrousos & Gold, 1992). These levels have been evidenced to vary systematically across both socioeconomic strata and race/ethnicity, with inverse associations between socioeconomic status and CRP as well as higher levels demonstrated among Black and Hispanic Americans than among their White peers (Nazmi & Victoria, 2007).

In Add Health, sandwich enzyme-linked immunosorbent assay methodology was utilized to measure levels of CRP from the dried capillary blood sample described previously (Whitsel et al., 2012). Analyses in the present research examined CRP continuously, with higher scores indicating greater health risk (Pearson et al., 2003). Similarly to EBV antibody levels, continuous measures of CRP were log transformed in order to normalize the distribution.

Allostatic load. Allostatic load (AL) taps into the the dysregulation of the physiological response systems, measured via biological markers such as those described above, in contexts of chronic stress (McEwen, 1998). Measures of allostatic load, which

index multiple biological markers into a single composite score, are intended to simultaneously tap into stress responses across multiple systems, and thus may provide more comprehensive measures of stress-response function than single biological markers alone (Juster, McEwen, & Lupien, 2010).

There are a variety of ways to methodologically conceptualize allostatic load (e.g., Dich, Doan, & Evans, 2015; Evans, 2003; Wickrama, O'Neal, & Lee, 2015). The present analyses utilized the most common practice of scoring AL, in which the number of measures on which participants score above a high-risk cutoff is summed (Juster et al., 2010). Specifically, AL scores ranged from 0 to 5 in the present analyses (physiological parameters included resting diastolic and systolic blood pressure, body mass index, EBV antibodies, and C-reactive protein levels). Clinically relevant cutoffs were utilized to score high-risk blood pressure scores, body mass indices, and C-reactive protein levels as those individuals with prehypertension or hypertension (SBP≥120 mmHg, DBP≥90 mmHg; Chobanian et al., 2003), those who were overweight or obese (BMI≥25; World Health Organization, 2000), and those with high cardiovascular risk (hsCRP level > 3 mg/L; Pearson et al., 2003), respectively (Dich, Doan, & Evans, 2015). Given the lack of a clinically relevant cutoff for high-risk levels of EBV antibodies, participants in the top quartile of the sample distribution on EBV scores were considered high-risk, according to common practice in the allostatic load literature (Juster et al., 2010).

Academic outcomes. Academic achievement was operationalized with three measures: wave 1 GPA, wave 1 academic effort, and wave 4 college completion.

GPA. At wave 1, youth reported their grades at the most recent grading period in English/Language Arts, Mathematics, History/Social Studies, and Science. Grade point

average was calculated by averaging individual grades across subjects, with a final scale ranging from 1 (all D's or lower) to 4 (consistent grades of A). Although this measure relies on self-report and thus may be biased, self-reports of grades are moderately correlated with actual GPA (Gonzales et al., 1996), and therefore serve as a proxy for academic performance in the proposed study.

Academic effort. The second academic indicator, academic effort, was assessed utilizing self-report at wave 1. This measure taps into students' effortful competence and self-control to do well in school with the question: *"In general, how hard do you try to do your school work well?"* with higher scores indicating greater effort extended.

College completion. Finally, youths' completion of college by wave 4 (average age 29) served as a measure of their academic achievement throughout the transition to adulthood.

Socioeconomic status. Wave 1 parental reports of (1) family income, coded as the proportion of the federal poverty line in order to account for family size, (2) the highest level of parental educational attainment, coded continuously in years, and (3) parental job prestige were utilized as indicators of socioeconomic status. Parental job prestige was derived from youth report at Wave 1 of each residential parent's professional occupation, coded using Standard Occupational Classification (SOC) 2000 job categories and occupation prestige codes derived from Nakao and Treas' (1994) coding system. For youth with two residential parents, the higher educational attainment and prestige score of either parent were used. Analyses considered discrete measures of income, education, and parental job prestige separately, given evidence of variation in associations with health outcomes by SES measure (Braveman et al., 2005), and also

considered a family SES composite. Each measure of family income, parental education, and parental occupational prestige was standardized and averaged to create the composite measure of family SES. Additional models assessed both linear and nonlinear SES terms. Analyses also considered SES categorically, demarcating poor families from all other families by investigating meaningful cut-points: first, families were grouped into socioeconomic quintiles, ranging from the least affluent 20% to the most affluent 20% of families in the sample and second, families were grouped into deciles, with the least affluent and most affluent 10% compared to the middle 80% of families.

Race/ethnicity. A categorical delineation of race/ethnicity was created utilizing youths' self-report at wave 1 in response to the following questions: "*What is your race?",* "*Are you Hispanic or Latino(a)*?", "*What is your Asian background?*", and *"What is your Hispanic or Latino background?"* The study focused on specific groups with adequate cell sizes and documented differential levels of marginalization in US society (e.g., Frisbie et al., 2001; Gee et al., 2007; Lopez & Stanton-Salazar, 2001) including: non-Hispanic Asian (n = 648), non-Hispanic Black (n =2,789), Latino (n = 1,524), and non-Hispanic White (n = 8,525) youth. Youth who reported more than one race/ethnicity or who reported identifying as another race or ethnicity than those previously listed were categorized into a multiracial and other racial/ethnic group (n = 1,248).

As in all studies considering variation across racial and ethnic groups, it is important to note that the categorization of racial groups reflects social rather than biological variation, and has historically reflected oppression and social inequality (American Sociological Association, 2003). Further, the specific categorizations utilized

in the present study are based on self-report in response to potentially ambiguous racial/ethnic categories. The non-Hispanic Black category, for example, encompasses students identifying as either Black or African American. Nonetheless, such racial and ethnic categorizations have served as organizing principles in the United States, and continue to be used as social constructs to track and understand social inequities (American Sociological Association; Omi & Winant, 1994). Further, both the non-Hispanic Asian and the Latino panethnic groups are comprised of adolescents who identified with a variety of different Asian and Latino ethnic groups. In the present analyses, these different groups were grouped into larger, panethnic groups due to cell size limitations. However, it is important to note that these are not monolithic groups; socioeconomic status, cultural expectations of educational attainment, reasons for migration to the United States, and both reception and models of incorporation into U.S. society have the potential to vary drastically within these panethnic groups (e.g., Bohon, Johnson, & Gorman, 2006). In order to further probe such differences, additional model specifications with a variety of different analytic samples were also considered.

School context. Capitalizing on the wealth of data available from the in-school surveys, the present analyses also considered the roles of both (1) socioeconomic characteristics and (2) the pervasiveness of prejudice and unfair treatment at school in associations between achievement and health.

School SES. School-wide measures of family socioeconomic status were delineated utilizing the average family SES in the school. This measure aims to capture potentially stressful opportunities for wealth-based social comparisons in the school setting, which may provide additional opportunities for stressful experiences and affect

the academic performance and/or well-being of socioeconomically disadvantaged students (Crosnoe, 2009).

School prejudice and unfair treatment. To capture the potential for experiences of racial/ethnic marginalization, school-wide measures were created using reports of student prejudice and teacher unfair treatment. During the wave 1 in-school survey, youth reported on perceived prejudice in their school in response to the statement *"The students in this school are prejudiced,"* with responses ranging from 1 ("*strongly agree*") to 5 ("*strongly disagree*"). Reponses were reverse coded, with greater scores indicating greater perceived student prejudice. Additionally, students reported their agreement with the statement that "*Teachers at this school treat students fairly*" on a scale of 1 ("*strongly agree*") to 5 ("strongly disagree"), with higher scores reflecting greater perception of unfair treatment. These measures have been utilized as indicators of prejudice and discrimination in prior research using the Add Health data (e.g., Benner et al., 2015; Respress et al., 2013). School-wide measures of prejudice and unfair treatment were created from self-report of all students within each school. In such measures, all students within a school received the same score of school-wide perceived prejudice, for example, regardless of their self-reported race/ethnicity. Additional models also considered measures of race-specific prejudice and unfair treatment, in which responses were averaged by racial/ethnic group, in order to calculate group-specific measures within each school. For example, within each school, Black students received the average level of perceived prejudice reported by Black students within their school as an indicator of school-wide, race-specific student prejudice.

Covariates. A number of youth, family, and school characteristics that may select adolescents into high achievement or into health status were utilized as controls in all analyses.

Individual covariates. At the individual level, covariates included age, gender, prior health status, and pregnancy. Indicators of race/ethnicity were included as covariates in models that did not consider the moderating role of race/ethnicity. Age was considered given that the magnitude of health inequities varies with age (Adler, Marmot, McEwen, & Stewart, 1999), while controlling for gender helped to account for gender differences in health risk during adolescence and young adulthood, including differential risk for cardiovascular disease (Cook, Weitzman, Auinger, Nguyen, & Dietz, 2003) as well as higher inflammatory risk among females (Goosby, Cheadle, & McDade, 2016). Additionally, it is important to consider gender given that the effects of marginalization may differ across males and females (Krieger et al., 1993). Indicators of prior physical health were included in all analyses in order to more accurately examine changes in health status over time. The inclusion of earlier physical health indicators also helped to account for the effects of early childhood stress as well as the intergenerational transmission of physical health (Currie & Moretti, 2007; Haas, 2006), allowing the analyses to better examine the unique effects of stress during adolescence on later physiological health. Specifically, an indicator of low birth weight (<2,500 grams), derived from parent report at wave 1, was included in all analyses given associations between birth weight and later physical health (Richardson, Hussey, & Strutz, 2011). Additionally, a dichotomous indicator for fair or poor initial health status at wave 1 tapped into prior health. Fair or poor initial health status was derived from adolescent

report in response to the question: "*In general, how is your health? Would you say…*", with responses ranging from 1 ("*excellent*") to 5 ("*poor*"). *"Fair"* and *"poor"* responses were collapsed into an indicator denoting fair or poor health. Finally, female pregnancy status was also included as a covariate in models considering CRP and EBV, while pregnant females were excluded from analyses considering blood pressure, BMI, and AL in line with extant research (Richardson et al., 2011; Walsemann, Goosby, & Farr, 2016).

Family covariates. Family covariates derived from both youth and parent reports at wave 1 denoted whether the primary caregiver was currently or previously married (versus never married) at wave 1. In models that did not consider the moderating role of socioeconomic status, family SES was also incorporated as a covariate (as a standardized, averaged composite of family income, highest level of parental education, and parental job prestige).

School covariates. A variety of measures at the school level helped to account for differences across schools in the sample. School-wide averages of academic achievement were included as covariates in order to account for differences in grading practices across schools and to consider the specific context in which adolescents strive for academic success. The school averages of (1) GPA, (2) academic effort, and (3) college completion were created by aggregating reports of each previously described achievement indicator to the school level. Additionally, continuous measures denoting the percentage of Asian, African American or Black, and Latino students at the school were included, given that rates of school-wide prejudice vary as a function of the proportion of racial/ethnic minority students enrolled at the school (Benner et al., 2014). School characteristics, drawn from administrator reports at wave 1, denoted school size and schools that

included high school grades as opposed to only grades 6, 7, and 8. Finally, urbanicity and region of the country were considered as covariates in order to account for differential types and rates of health concerns (e.g., Nelson, Gordon-Larsen, Song, & Popkin, 2006; Ricketts, 2000), socioeconomic disadvantage (Economic Research Service, 2015), and perceived prejudice (Patten, 2013) across locale.

Analytic Technique

All analyses were conducted in Mplus version 7.4 (Muthén & Muthén, 2012) with the wave 4 sample weight and adjustments for school clustering. Missing data analysis suggested that missingness ranged from 0% to 31%, with 0% to 29% missing on achievement measures, 24% to 31% missing on subcomponents of family socioeconomic status, and 0 to 14% missing on covariates. Because missing data introduces biases into the sample, 30 complete datasets were created using a bootstrap-based Expectation Maximization Bayesian algorithm in R utilizing all analytic variables (Honaker & King, 2010). However, rather than impute missing indicators of physiological health, those participants with missing data on outcome variables of interest were excluded from the analytic sample, thus leading to analytic sample sizes of 14,296 in models considering diastolic and systolic blood pressure, 14,564 in models considering body mass index, 13,132 in models considering Epstein-Barr virus antibodies and C-reactive protein levels, and 12,672 in models considering allostatic load.

In order to consider (1) the prospective links between achievement and health, (2) whether these associations vary across socioeconomic status or racial/ethnic groups, and (3) how school contexts exacerbate or buffer against these associations, three sets of models were estimated for each physiological health outcome.

The first set of models, considering associations between adolescent academic performance and adult physiological health, independently regressed each outcome of interest on the three indicators of academic performance utilizing a series of multilevel ordinary least square (OLS) regression analyses. An example equation, Equation 1, is shown below, with Y representing predicted health in early adulthood (at wave 4) for adolescent i, attending school j.

Equation 1: $Y_{ij} = \gamma_{00} + \gamma_{10}(\text{Relative GPA})_{ij} + \gamma_{20}(\text{Relative Academic Effort})_{ij} + \gamma_{30}(\text{Relative College Completion})_{ij} + \gamma_{40}(\text{Youth \& Family Covariates})_{ij} + \gamma_{01}(\text{School Covariates})_{j} + u_{0j} + \varepsilon_{ij}$

The second aim, testing whether these associations vary across SES and race/ethnicity, was assessed by including interactions between centered, continuous measures of academic performance and (1) centered, continuous measures of SES or (2) dichotomous indictors of race/ethnicity in the models. All continuous independent variables were mean-centered in order to reduce multicollinearity (Dearing & Hamilton, 2006). Models considering socioeconomic status as a moderator considered a variety of specifications for SES: discrete measures of income, education, and parental job prestige; linear and nonlinear family SES; categorical indicators for quintile of SES; and categorical indicators for the top and bottom 10% of family SES. For illustrative purposes, Equation 2 considers whether the association between high school academic effort and adult physiological health varies as a function of family socioeconomic status while Equation 3 considers whether the association between high school GPA and adult health varies across racial/ethnic groups.

Equation 2. $Y_{ij} = \gamma_{00} + \gamma_{10}(\text{Relative GPA})_{ij} + \gamma_{20}(\text{Relative Academic Effort})_{ij} + \gamma_{30}(\text{Relative College Completion})_{ij} + \gamma_{40}(\text{Family SES})_{ij} + \gamma_{50}(\text{GPA*Family SES})_{ij} + \gamma_{60}(\text{Youth \& Family Covariates})_{ij} + \gamma_{01}(\text{School Covariates})_{j} + u_{0j} + \varepsilon_{ij}$

Equation 3. $Y_{ij} = \gamma_{00} + \gamma_{10}(\text{Relative GPA})_{ij} + \gamma_{20}(\text{Relative Academic Effort})_{ij} + \gamma_{30}(\text{Relative College Completion})_{ij} + \gamma_{40}(\text{Race/Ethnicity})_{ij} + \gamma_{50}(\text{GPA*Race/Ethnicity})_{ij} + \gamma_{60}(\text{Youth \& Family Covariates})_{ij} + \gamma_{01}(\text{School Covariates})_{j} + u_{0j} + \varepsilon_{ij}$

The final aim considered the moderating role of school characteristics by incorporating three way interactions between centered, continuous measures of academic performance, (1) centered, continuous measures of SES or (2) indicators of race/ethnicity, and centered, continuous measures of (1) school-wide SES or (2) school-wide prejudice and unfair treatment. Equation 4 below considers the moderating role of school-wide family SES on associations between GPA, family SES, and adult physical health. Meanwhile, Equation 5 illustrates the moderating role of school-wide student prejudice and teacher unfair treatment on the associations between GPA, race/ethnicity, and adult physiological health.

Equation 4. $Y_{ij} = \gamma_{00} + \gamma_{10}(\text{Relative GPA})_{ij} + \gamma_{20}(\text{Relative Academic Effort})_{ij} + \gamma_{30}(\text{Relative College Completion})_{ij} + \gamma_{40}(\text{Family SES})_{ij} + \gamma_{50}(\text{GPA*Family SES})_{ij} + \gamma_{60}(\text{Youth \& Family Covariates})_{ij} + \gamma_{71}(\text{Family SES*School SES})_{ij} + \gamma_{82}(\text{GPA*School SES})_{ij} + \gamma_{93}(\text{GPA*Family SES*School SES})_{ij} + \gamma_{04}(\text{School SES})_{j} + \gamma_{08}(\text{School Covariates})_{j} + u_{0j} + \varepsilon_{i}$

Equation 5. $Y_{ij} = \gamma_{00} + \gamma_{10}(\text{Relative GPA})_{ij} + \gamma_{20}(\text{Relative Academic Effort})_{ij} + \gamma_{30}(\text{Relative College Completion})_{ij} + \gamma_{40}(\text{Race/Ethnicity})_{ij} + \gamma_{50}(\text{GPA*Race/Ethnicity})_{ij} + \gamma_{60}(\text{Youth \& Family Covariates})_{ij} + \gamma_{71}(\text{Race/Ethnicity*Prejudice})_{ij} + \gamma_{82}(\text{Race/Ethnicity*Unfair Treatment})_{ij} + \gamma_{93}(\text{GPA*Prejudice})_{ij} + \gamma_{104}(\text{GPA*Unfair Treatment})_{ij} + \gamma_{115}(\text{GPA*Race/Eth*Prejudice})_{ij} + \gamma_{126}(\text{GPA*Race/Eth*Unfair Treatment})_{ij} + \gamma_{07}(\text{School Prejudice})_{j} + \gamma_{08}(\text{School Unfair Treatment})_{j} + \gamma_{09}(\text{School Covariates})_{j} + u_{0j} + \varepsilon_{i}$

All analyses considered GPA and effort (wave 1) and college completion (by wave 4) as predictors of physiological health at wave 4, with initial models testing these academic achievement and effort variables individually and then in combination, with careful attention paid to potential issues of multicollinearity. An extensive set of

adolescent, family, and school characteristics that are theoretically and empirically linked with achievement and health were included in all models to diminish selection bias and to better isolate the role of striving for academic success in later health.

CHAPTER 4: RESULTS

Sample Characteristics

Weighted descriptive statistics for the full sample, as well as for the racial/ethnic subgroups of interest, are presented in Table 1. On average, young adults in the full sample reported elevated rates of inflammation at wave 4 (average age 29). In the full sample, young adults were, on average, overweight (BMI = 29) and pre-hypertensive on measures of systolic blood pressure (SBP = 125). Conversely, young adults were, on average, healthier on measures of diastolic blood pressure (DBP = 80), Epstein-Barr virus antibodies (EBV = 4.94), and C-reactive protein levels (CRP = 0.72). The full sample reported earning mostly "B" grades in English/Language Arts, Mathematics, History/Social Studies, and Science (GPA = 2.83), and the majority of students reported that they *"try hard enough [in school], but not as hard as I could."* College completion rates by wave 4, when youth averaged 29 years in age, were in line with national estimates at this time (Bauman & Graf, 2003), with roughly 30% of young adults reporting having completed college. Regarding perceptions of student prejudice and teacher unfair treatment at school, youth on average reported neutral perceptions. Specifically, youth reported that they *"neither agree or disagree"* with statements that *"the students at this school are prejudiced"* and *"the teachers at this school treat students fairly."* The second through sixth columns of Table 1 present sample descriptives for each racial/ethnic group of interest: non-Hispanic Asian, non-Hispanic

Black, Latino, Multiracial/other youth, and non-Hispanic White youth. Measures of academic achievement and physiological health were modestly but statistically significantly correlated, as seen in Table 2.

Table 1. Weighted Descriptive Statistics

	Full Sample N = 14,734	Non-Hispanic Asian Youth n = 648	Non-Hispanic Black Youth n = 2,789	Latino Youth n = 1,524	Multiracial and Other Youth n = 1,248	Non-Hispanic White Youth n = 8,525
Dependent Variables at Wave 4						
Diastolic blood pressure	79.82(10.20)	79.23(9.86)	80.41(10.56)	78.87(10.14)	80.09(10.43)	79.75(10.11)
Systolic blood pressure	125.50(13.67)	122.57(13.82)	126.55(14.58)	124.59(13.79)	125.47(14.19)	125.44(13.37)
Body Mass Index	29.13(7.37)	26.53(5.92)	30.68(8.32)	29.63(7.12)	29.61(7.50)	28.71(7.17)
Epstein-Barr virus antibodies	4.94(0.56)	4.84(0.58)	5.08(0.57)	4.97(0.59)	4.95(0.58)	4.91(0.55)
C-reative protein levels	0.72(1.31)	0.15(1.23)	0.85(1.38)	0.92(1.28)	0.72(1.41)	0.68(1.28)
Allostatic load	2.14(1.23)	1.63(1.26)	2.33(1.22)	2.36(1.19)	2.22(1.26)	2.08(1.23)
Family Socioeconomic Status	-0.02(0.70)	0.06(0.78)	-0.19(0.64)	-0.39(0.69)	-0.13(0.70)	0.06(0.69)
Acadamic Achievement						
GPA	2.83(0.80)	3.23(0.72)	2.57(0.76)	2.61(0.76)	2.75(0.79)	2.91(0.80)
Academic effort	3.25(0.76)	3.41(.072)	3.39(0.71)	3.34(0.71)	3.24(0.80)	3.21(0.77)
College completion (W4)	29.57	52.45	20.48	21.34	24.90	32.82
School Predictors						
School SES	-0.03(0.26)	-0.01(0.30)	-0.14(0.23)	-0.16(0.25)	-0.08(0.26)	0.01(0.26)
Student prejudice	3.19(0.37)	3.08(0.33)	3.02(0.40)	3.12(0.27)	3.13(0.33)	3.25(0.38)
Teacher unfair treatment	3.43(0.25)	3.43(0.18)	3.35(0.21)	3.43(0.20)	3.42(0.22)	3.45(0.26)
Individual Covariates						
Age	15.94(1.79)	15.98(1.78)	16.17(1.86)	15.97(1.82)	15.79(1.83)	15.90(1.77)
Male	49.75	53.32	47.87	50.30	50.03	49.80
Low Birthweight	6.96	13.73	11.88	8.97	6.86	5.57
Poor prior health	7.09	7.17	8.59	6.04	8.18	6.34
Pregnancy (W4)	3.07	1.55	2.42	3.64	2.91	3.27
Family Covariates						
Parent single	5.78	4.04	21.1	5.76	7.40	2.39
Parent divorced/separated	25.24	21.07	37.97	22.42	28.46	22.83
Parent married	68.98	74.89	40.93	71.82	64.14	74.78
School Covariates						
Average GPA	2.81(0.20)	2.82(0.18)	2.69(0.19)	2.74(0.22)	2.79(0.19)	2.85(0.19)
Average academic effort	3.25(0.14)	3.28(0.11)	3.33(0.15)	3.28(0.13)	3.28(0.13)	3.23(0.14)
Average college completion (W4)	34.83(12.01)	38.86(15.15)	32.84(14.13)	33.52(11.04)	33.31(13.09)	35.57(14.24)
Percent Asian	3.25(6.16)	19.16(12.37)	2.38(4.29)	6.16(7.54)	5.42(8.79)	2.10(4.47)
Percent Black	14.33(20.36)	15.20(14.17)	45.70(26.74)	13.07(13.32)	18.54(22.02)	7.91(12.33)
Percent Latino	4.95(7.88)	11.37(11.15)	4.06(6.85)	16.85(11.84)	6.09(10.23)	2.64(5.14)
Small school	17.83	4.27	18.58	15.02	20.13	18.61
Medium school	44.42	39.76	50.99	27.92	42.18	46.65
Large school	37.75	55.97	30.43	57.06	37.69	34.74
Includes high school grades	70.01	81.70	68.78	71.04	69.43	69.84
Rural	15.97	2.35	13.03	4.10	14.78	19.27
Suburban	58.29	67.86	56.97	40.52	55.69	62.19
Urban	25.74	29.79	30.00	55.38	29.53	18.54
Midwest	31.47	15.41	22.04	11.00	24.80	38.25
Northeast	13.50	15.46	8.39	17.02	15.22	14.40
South	37.94	12.06	64.68	42.2	32.68	33.94
West	17.09	57.07	4.89	29.78	27.30	13.41

Note: M(SD) or % reported in each cell. Measures were drawn from wave 1 unless otherwise noted as being drawn from wave 4 with (W4). Epstein-Barr virus antibodies and C-reactive protein levels are logged.

Table 2. Sample Correlations

	1	2	3	4	5	6	7	8	9	10	11
1. Diastolic blood pressure	1.00										
2. Systolic blood pressure	0.78**	1.00									
3. Body mass index	0.28**	0.32**	1.00								
4. EBV antibodies	-0.01	-0.03	-0.01	1.00							
5. CRP levels	0.13**	0.12**	0.45**	0.08**	1.00						
6. Allostatic load	0.57**	0.60**	0.60**	0.27**	0.54**	1.00					
7. GPA	-0.05**	-0.07**	-0.10**	-0.06**	-0.06**	-0.10**	1.00				
8. Academic effort	-0.04**	-0.06**	0.01	0.01	0.01	-0.03**	0.22**	1.00			
9. College completion	-0.08**	-0.08**	-0.15**	-0.05**	-0.10**	-0.13**	0.30**	0.07**	1.00		
10. Family SES	-0.04**	-0.03**	-0.11**	-0.05**	-0.10**	-0.10**	0.23**	-0.01	0.30**	1.00	
11. Adolescent is Asian	0.01	-0.02+	-0.04**	-0.02+	-0.08**	-0.04**	0.09**	0.03**	0.09**	0.05**	1.00
12. Adolescent is Black	0.03**	0.04**	0.09**	0.11**	0.04**	0.07**	-0.13**	0.08**	-0.06**	-0.04**	-0.11**
13. Adolescent is Latino	-0.02**	-0.02*	0.03**	0.02*	0.06**	0.03**	-0.10**	-0.01	-0.06**	-0.18**	-0.10**
14. Adolescent is multiracial/other	0.01	0.01	0.03**	0.01	0.01	0.02*	-0.04**	-0.01	-0.05**	-0.04**	-0.09**
15. Adolescent is White	-0.01*	-0.02*	-0.10**	-0.10**	-0.03**	-0.06**	0.14**	-0.06**	0.06**	0.14**	-0.25**
16. School SES	-0.04**	-0.03**	0.14**	-0.06**	-0.10**	-0.10**	0.13**	-0.04**	0.30**	0.39**	0.04**
17. School prejudice	0.05**	0.03**	0.04**	0.01	0.02+	0.03**	-0.06*	-0.12**	-0.07**	-0.03**	-0.08**
18. School unfair treatment	-0.03**	-0.02*	-0.05**	-0.06**	-0.05**	-0.06*	0.13**	-0.09**	0.07**	0.07**	0.02*
19. Adolescent age	0.09**	0.06**	0.05**	0.03**	0.03**	0.07**	-0.08*	-0.13**	-0.04**	-0.04**	0.05**
20. Adolescent is male	0.23**	0.36**	-0.01+	-0.13**	-0.19**	0.10**	-0.08*	-0.10**	0.03**	-0.03**	0.02*
21. Birthweight	0.01	0.01	0.05**	-0.03**	-0.03**	0.01	0.02*	-0.03**	0.05**	0.05**	-0.05**
22. Poor health	0.03**	0.03**	0.12**	0.04**	0.08**	0.06**	-0.06**	-0.04**	0.05**	-0.05**	-0.01
23. Adolescent is pregnant	-0.15**	-0.13**	0.02*	0.01	0.13**	-0.01	0.02*	0.04*	0.03**	-0.01	-0.01
24. Parent is single	0.01	0.01	0.04**	0.02**	0.02*	0.03**	-0.06*	0.04**	-0.07**	-0.09**	-0.01
25. Parent is divorced/separated	0.01	0.01	0.02**	0.01	0.01	0.01	-0.08*	-0.03**	-0.10**	-0.15**	-0.03**
26. Parent is married	-0.01	0.01	-0.04**	-0.04**	-0.02+	-0.03**	0.10**	0.01	0.12**	0.18**	0.03**
27. School average GPA	-0.02**	-0.02+	-0.09**	-0.06**	-0.07**	-0.07**	0.25**	0.04**	0.16**	0.20**	0.01
28. School average effort	-0.02**	-0.01	0.04**	0.02	0.01	0.01	0.05**	0.18**	-0.06**	-0.08**	0.04**
29. School college completion	-0.04**	-0.04**	-0.12**	-0.05**	-0.08**	-0.09**	0.11**	-0.03**	0.35**	0.34**	0.08**
30. School % Asian	0.00	0.01	0.01	0.03	-0.02*	-0.01	0.02+	0.02*	0.05**	0.05**	0.38**

Note: + p <.10, * p <.05, ** p <.01.

	1	2	3	4	5	6	7	8	9	10	11
31. School % Black	0.02	0.02*	0.08**	0.07**	0.04**	0.05**	-0.07**	0.09**	-0.03*	-0.06**	0.01
32. School % Latino	-0.01	-0.01*	0.06**	0.03**	0.03**	0.03**	-0.07**	-0.01	-0.06**	-0.11**	0.20**
33. School is small	-0.01	0.01	0.01+	-0.02*	0.01	-0.01	0.05**	0.05**	-0.01	-0.01	-0.07**
34. School is medium	-0.01	-0.01	-0.01	-0.02+	0.01	-0.01	0.06**	0.05**	-0.02	-0.01	-0.09**
35. School is large	0.01	-0.01	-0.01	0.03*	-0.01	0.01	-0.10**	0.09**	0.02**	0.02*	0.14**
36. School has high school grades	0.05**	0.03**	0.03**	0.02+	0.03**	0.05**	-0.06*	-0.12**	0.03**	0.02**	0.07**
37. School is rural	0.03**	0.04**	0.03**	-0.01	0.02**	0.03**	-0.01	-0.01	-0.07**	-0.10**	-0.09**
38. School is suburban	0.01	0.01	-0.02+	0.01	-0.01+	-0.01	0.03**	0.02*	0.02**	0.05**	0.08**
39. School is urban	-0.03**	-0.03**	-0.01	0.01	0.01	-0.03**	-0.02*	-0.01	0.03**	0.03**	-0.01
40. School is in Midwest	0.01	0.01	-0.04**	-0.01	0.02*	-0.02+	0.01	-0.05**	0.04**	0.04**	0.07**
41. School is in Northeast	-0.03**	-0.03**	-0.04**	-0.02	-0.02	-0.02*	0.03**	0.03**	0.07**	0.05**	-0.04**
42. School is in South	0.03**	0.03**	0.06**	0.01	0.04**	0.04**	-0.05**	0.04**	-0.07**	-0.10**	-0.13**
43. School is in West	-0.01	-0.02*	0.01	0.01	-0.02+	-0.01	0.04**	0.04**	-0.02*	0.04**	0.25**

Note: + p <.10, * p <.05, ** p <.01.

	12	13	14	15	16	17	18	19	20	21	22
12. Adolescent is Black	1.00										
13. Adolescent is Latino	-0.18**	1.00									
14. Adolescent is multiracial/other	-0.16**	-0.12**	1.00								
15. Adolescent is White	-0.53**	-0.39**	-0.36**	1.00							
16. School SES	-0.11**	-0.18**	-0.03**	0.20**	1.00						
17. School prejudice	-0.22**	-0.08**	-0.06**	0.30**	-0.05**	1.00					
18. School unfair treatment	-0.14**	-0.02**	-0.01	0.12**	0.21**	-0.43**	1.00				
19. Adolescent age	-0.03	0.08**	-0.02*	-0.04**	-0.01+	0.31**	-0.29**	1.00			
20. Adolescent is male	-0.04**	0.01	0.02*	0.01	-0.01	0.02**	0.01	0.05**	1.00		
21. Birthweight	-0.12**	0.02*	-0.01	0.11**	0.06**	0.01	0.06**	-0.03**	0.10**	1.00	
22. Poor health	0.02*	0.03**	0.03**	-0.04**	-0.07**	0.01	-0.03**	0.03**	-0.06**	-0.01	1.00
23. Adolescent is pregnant	0.01	0.01	-0.01	0.02+	0.01	0.01	0.01	-0.02+	-0.17**	-0.02*	-0.01
24. Parent is single	0.24**	-0.02**	0.01	-0.18**	-0.10**	-0.08**	-0.04**	-0.01	-0.03**	-0.05**	0.03**
25. Parent is divorced/separated	0.11**	0.01	0.04**	-0.10**	-0.07**	-0.03**	-0.08**	0.03**	-0.02**	-0.02**	0.04**
26. Parent is married	-0.22**	0.01	-0.04**	0.18**	0.11**	0.07**	0.52**	-0.03**	0.03**	0.07**	-0.05**
27. School average GPA	-0.18**	-0.22**	-0.01	0.28**	0.53**	-0.20**	0.44**	-0.24**	0.02+	0.05**	-0.04**
28. School average effort	0.25**	-0.01	0.07**	-0.25**	-0.25**	-0.63**	0.18**	-0.44**	-0.02*	-0.02**	0.02*
29. School college completion	-0.03**	-0.05**	-0.01	0.02**	0.83**	-0.19**	0.18**	0.01	0.01	0.04**	-0.07**
30. School % Asian	-0.03**	0.15**	0.12**	-0.31**	0.10**	-0.17**	-0.07**	0.13**	0.01	0.01	0.02**
31. School % Black	0.58**	-0.06**	0.03**	-0.45**	-0.21**	-0.41**	-0.23**	-0.02*	-0.02	-0.09**	0.01
32. School % Latino	-0.43**	0.49**	0.07**	-0.41**	-0.32**	-0.18**	-0.04**	0.18**	0.01	0.01	0.04**
33. School is small	0.01	-0.10**	-0.03*	-0.03*	-0.01	-0.31**	0.32**	-0.20**	-0.01	0.03**	-0.01
34. School is medium	0.05**	-0.15**	-0.02+	-0.02+	-0.03**	-0.10**	0.18**	-0.25**	0.01	-0.01	0.01
35. School is large	-0.05**	0.21**	0.03**	0.03**	0.03**	0.31**	-0.40**	0.38**	0.02*	-0.02*	0.02*
36. School has high school grades	-0.05**	0.06**	-0.01	-0.03**	0.06**	0.36**	-0.32**	0.61**	0.01	0.01	0.01+
37. School is rural	-0.07**	-0.14**	-0.04**	0.21**	-0.21**	0.22**	0.05**	0.03**	0.01	0.06**	0.02*
38. School is suburban	0.02*	-0.09**	0.02+	-0.01	0.13**	0.01	0.06**	0.01	0.01	-0.01	0.01+
39. School is urban	0.04**	0.20**	0.02*	-0.17**	0.03**	-0.17	-0.10**	-0.03**	-0.02+	-0.04**	-0.03**
40. School is in Midwest	-0.03**	-0.14**	-0.06**	0.22**	0.15**	0.17	-0.08**	-0.01	0.01	0.04**	-0.02*
41. School is in Northeast	-0.10**	0.01	0.01	0.09**	0.12**	-0.11**	0.10**	-0.03**	-0.01	0.01	-0.01
42. School is in South	0.22**	0.03**	0.05**	-0.10**	-0.29**	0.08**	-0.10**	-0.03**	0.01	-0.05**	-0.01
43. School is in West	-0.10**	0.12**	0.11**	-0.18**	0.08**	-0.18**	0.11**	0.06**	-0.01	0.01	0.02**

Note: + p <.10, * p <.05, ** p <.01.

	23	24	25	26	27	28	29	30	31	32	33
23. Adolescent is pregnant	1.00										
24. Parent is single	-0.01	1.00									
25. Parent is divorced/separated	-0.01	-0.16**	1.00								
26. Parent is married	0.01	-0.37**	-0.86**	1.00							
27. School average GPA	0.01	-0.08**	-0.09**	0.13**	1.00						
28. School average effort	-0.01	0.06**	0.03**	-0.07**	0.21**	1.00					
29. School college completion	-0.01	-0.08**	-0.04**	0.08**	0.43**	-0.15**	1.00				
30. School % Asian	-0.01	-0.02+	-0.01	0.02+	0.02**	0.09**	0.19**	1.00			
31. School % Black	-0.03+	0.19**	0.10**	-0.19**	-0.30**	0.42**	-0.03**	-0.03**	1.00		
32. School % Latino	-0.01	0.02*	0.03**	-0.04**	-0.33**	0.07**	-0.10**	'-0.10**	-0.03**	1.00	
33. School is small	-0.01	-0.01	-0.01	0.01	0.19**	0.26**	-0.05**	-0.04**	0.05**	-0.17**	1.00
34. School is medium	0.01	0.04**	-0.04**	0.01	0.20**	0.31**	-0.07**	-0.06**	0.05**	-0.31**	-0.31**
35. School is large	-0.01	-0.04**	0.03**	-0.01	-0.33**	-0.48**	0.09**	0.09**	-0.09**	0.42**	-0.40**
36. School has high school grades	-0.01	0.05**	0.01	0.02+	-0.21**	-0.63**	0.10**	0.10**	-0.05**	0.15**	-0.19**
37. School is rural	0.01	-0.04**	-0.02*	0.04**	-0.04**	-0.03**	-0.26**	-0.26**	-0.10**	-0.26**	0.21**
38. School is suburban	0.01	-0.01	-0.02*	0.02**	0.08**	0.06**	0.08**	0.08**	0.03**	-0.06**	-0.19**
39. School is urban	-0.01	0.04**	0.04**	-0.05**	-0.05**	-0.05**	0.13**	0.13**	0.05**	0.28**	0.02**
40. School is in Midwest	0.02*	-0.01+	-0.02*	0.03**	0.03**	-0.28**	0.07**	0.07**	-0.15**	-0.031**	0,05**
41. School is in Northeast	-0.01	-0.02*	-0.01	0.02+	0.15**	-0.10**	0.22**	0.22**	-0.16**	-0.05**	-0.07**
42. School is in South	-0.03**	0.06**	0.03**	-0.06**	-0.20**	-0.20**	-0.20**	-0.20**	0.36**	-0.04**	0.09**
43. School is in West	0.02**	-0.04**	-0.01	0.03**	0.08**	0.14**	-0.02+	-0.02+	-0.14**	0.40**	-0.09**

Note: + p <.10, * p <.05, ** p <.01.

	34	35	36	37	38	39	40	41	42	43
34. School is medium	1.00									
35. School is large	-0.74**	1.00								
36. School has high school grades	-0.33**	0.45**	1.00							
37. School is rural	-0.01	-0.14**	0.10**	1.00						
38. School is suburban	0.18**	-0.04**	-0.08**	-0.50**	1.00					
39. School is urban	-0.18**	0.16**	0.01	-0.29**	-0.68**	1.00				
40. School is in Midwest	-0.03**	-0.01	0.03**	0.15**	-0.07**	-0.05**	1.00			
41. School is in Northeast	0.12**	-0.07**	0.07**	-0.05**	0.01	0.03**	-0.23**	1.00		
42. School is in South	0.09**	-0.15**	-0.11**	0.07**	-0.13**	0.09**	-0.46**	-0.30**	1.00	
43. School is in West	-0.17**	0.23**	0.05**	-0.19**	0.21**	-0.08**	-0.32**	-0.21**	-0.43**	1.00

Note: + p <.10, * p <.05, ** p <.01.

Descriptive Results

Tables 3 and 4 suggest clear differences in physiological health outcomes across the socioeconomic spectrum and across racial/ethnic groups. Specifically, no constant regression analyses tested for significant differences in the mean levels of blood pressure, body mass index, Epstein-Barr virus antibodies, C-reactive protein levels, and allostatic load across levels of socioeconomic status and across racial/ethnic groups. In order to illustrate mean differences across the socioeconomic spectrum, families were grouped into socioeconomic quintiles ranging from the least affluent 20% to the most affluent 20% of families in the sample. Within in each row, matched subscripts denote significant differences between groups.

Table 3 displays significant differences in mean levels of physiological health outcomes at wave 4 across the socioeconomic spectrum. Although blood pressure did not vary across quintiles of SES, modest evidence of a socioeconomic gradient emerged across other physiological health outcomes. Specifically, young adults in the lowest socioeconomic quintile had significantly higher body mass indexes than their peers in the top two quintiles of SES. On measures of Epstein-Barr virus antibodies and levels of C-reactive protein, young adults in the bottom two quintiles demonstrated significantly higher levels of inflammation than their peers in the top two quintiles, while young adults in the highest quintile had the lowest levels of allostatic load across the socioeconomic spectrum.

There were also significant differences across racial/ethnic groups in mean levels of inflammation at wave 4 (see Table 4). Although few differences emerged in blood pressure outcomes, with Latino youth generally showing lower levels than their peers,

distinct patterns emerged across the remaining physiological health outcomes. Non-Hispanic Asian youth had the lowest body mass indexes at wave 4, with their non-Hispanic White peers demonstrating the next lowest levels. Although non-Hispanic Black, Latino, and multiracial/other youth demonstrated higher BMIs than their Asian and White peers, young adults from these groups did not significantly differ among themselves in terms of their BMIs. Non-Hispanic Black young adults also evinced higher levels of Epstein-Barr virus antibodies than their peers in all other racial/ethnic groups (other than Latino young adults), while Latino youth showed higher levels than their non-Hispanic Asian peers. Fewer differences emerged in levels of C-reactive proteins, with non-Hispanic Asian youth demonstrating the lowest levels and Latino youth showing higher levels than their non-Hispanic White peers. Finally, non-Hispanic Asian and White young adults demonstrated lower allostatic load scores than their non-Hispanic Black, Latino, and multiracial/other peers.

Table 3. Mean Differences in Physiological Health Outcomes across the Socioeconomic Gradient

	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Physiological Health Outcomes					
Diastolic blood	79.85(10.35)	80.35(10.33)	79.78(10.04)	79.75(10.17)	78.88(10.05)
Systolic blood pressure	125.75(14.32)	126.16(14.10)	125.02(13.19)	125.52(13.59)	124.87(12.99)
Body Mass Index	29.94(7.51)*ab*	30.15(7.66)*c*	29.08(7.84)*d*	28.34(7.02)*ae*	27.55(6.44)*bcde*
Epstein-Barr virus	4.98(0.57)*ab*	4.96(0.56)*cd*	4.96(0.56)*ef*	4.91(0.57)*ace*	4.89(0.55)*bdf*
C-reative protein levels	0.89(0.88)*abc*	0.85(1.28)*de*	0.69(1.29)*af*	0.60(1.31)*bd*	0.49(1.31)*cef*
Allostatic load	2.26(1.24)*ab*	2.24(1.22)*c*	2.14(1.23)*d*	2.03(1.24)*a*	1.93(1.24)*bcd*

Note: M(SD) displayed in each cell. Within in each row, matched subscripts denote significant differences between groups. Quintiles of SES range from least (Quintile 1) to most (Quintile 5) affluent.

Table 4. Mean Differences in Physiological Health Outcomes across Racial/Ethnic Groups

	Non-Hispanic Asian Youth	Non-Hispanic Black Youth	Latino Youth	Multiracial & Other Youth	Non-Hispanic White Youth
Physiological Health Outcomes					
pressure	79.23(9.86)*a*	80.41(10.56)*b*	78.87(10.14)*abcd*	80.09(10.43)*c*	79.75(10.11)*d*
Systolic blood pressure	122.57(13.82)	126.55(14.58)*ab*	124.59(13.79)*a*	125.47(14.19)	125.44(13.37)*b*
Body Mass Index	26.53(5.92)*abcd*	30.68(8.32)*ae*	29.63(7.12)*bf*	29.61(7.50)*ce*	28.71(7.17)*aefe*
Epstein-Barr virus	4.84(0.58)*ab*	5.08(0.57)*acd*	4.97(0.59)*b*	4.95(0.58)*c*	4.91(0.55)*d*
C-reative protein levels	0.15(1.23)*abcd*	0.85(1.38)*a*	0.92(1.28)*be*	0.72(1.41)*c*	0.68(1.28)*de*
Allostatic load	1.63(1.26)*abc*	2.33(1.22)*ad*	2.36(1.19)*be*	2.22(1.26)*cf*	2.08(1.23)*def*

Note: M(SD) displayed in each cell. Within in each row, matched subscripts denote significant differences between groups.

Prospective Links between Academic Achievement and Physiological Health

The first set of models, considering associations between adolescent academic performance and adult physiological health, independently regressed each outcome of interest on the three indicators of academic performance utilizing a series of multilevel ordinary least square (OLS) regression analyses. These models incorporated a host of youth, family, and school characteristics that have been linked with academic achievement and/or health status, including indicators of prior health, and revealed consistent prospective links between academic achievement and physiological health.

The results of these models are presented in Table 5. Across models, academic effort did not emerge as linked with later physiological health (results available in Appendix A, Tables A.1 – A.5). Alternatively, college completion and, to a lesser extent, GPA emerged as significant predictors of physiological health outcomes. Therefore, for the sake of parsimony, the main tables present results of models with only GPA and college completion as predictors of later physiological health, as seen in Tables 5 – 9 Specifically, wave 1 GPA was negatively associated with BMI roughly 14 years later at wave 4. This difference was small in size; a one-standard-deviation (*SD*) difference in GPA was predictive of .05 *SD*s lower body mass index at the later wave. College completion was also negatively associated with physiological health, with a robust pattern emerging across all six outcomes of interest in which individuals who reported earning a college degree exhibited lower levels of inflammation than their peers without college degrees. Despite this robust pattern across indicators, the differences were still modest in size, ranging from .04 to .16 *SD*s on measures of systolic blood pressure and BMI, respectively.

Table 5. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analyses Predicting Physiological Health Outcomes

	Diastolic Blood Pressure *n* =14,296 Coef (SE)	Systolic Blood Pressure *n* =14,296 Coef (SE)	Body Mass Index *n* =14,564 Coef (SE)	Epstein-Barr Virus Antibodies *n* =13,132 Coef (SE)	C-Reactive Protein Levels *n* =13,132 Coef (SE)	Allostatic Load *n* =12,672 Coef (SE)
Acadamic Achievement						
GPA	-0.13 (0.20)	-0.26 (0.29)	-0.36 (0.16)*	-0.01 (0.01)	-0.04 (0.03)	-0.03 (0.03)
College completion	-0.85 (0.32)**	-0.72 (0.36)*	-1.37 (0.20)**	-0.06 (0.02)**	-0.20 (0.04)**	-0.16 (0.04)**
Family SES	-0.15 (0.22)	-0.20 (0.34)	-0.42 (0.13)**	-0.03 (0.02)+	-0.07 (0.03)*	-0.08 (0.03)**
Race/Ethnicity						
Asian	1.23 (0.89)	0.46 (1.41)	-1.14 (0.53)*	-0.03 (0.05)	-0.33 (0.09)**	-0.14 (0.09)
Black	0.45 (0.59)	1.11 (0.77)	0.77 (0.50)	0.15 (0.03)**	-0.01 (0.07)	0.12 (0.08)
Latino	-0.65 (0.53)	-0.45 (0.65)	0.34 (0.42)	0.07 (0.05)	0.12 (0.07)+	0.08 (0.07)
Multiracial & other	0.82 (0.49)+	0.79 (0.63)	0.75 (0.52)	0.04 (0.03)	0.02 (0.08)	0.16 (0.08)*
Individual & Family Covariates						
Age	0.04 (0.01)**	0.02 (0.01)*	0.01 (0.01)+	0.00 (0.00)*	0.00 (0.00)	0.00 (0.00)*
Male	4.24 (0.24)**	9.35 (0.32)**	-0.11 (0.22)	-0.17 (0.02)**	-0.50 (0.03)**	0.23 (0.04)**
Low Birthweight	0.39 (0.50)	0.07 (0.68)	-0.59 (0.41)	0.00 (0.04)	0.00 (0.07)	0.02 (0.07)
Poor prior health	1.22 (0.50)*	2.28 (0.60)**	2.69 (0.39)**	0.03 (0.04)	0.28 (0.09)**	0.25 (0.08)**
Pregnancy (at wave 4)	-- --	-- --	-- --	-0.08 (0.04)+	0.75 (0.06)**	-- --
Parent single	0.77 (0.68)	0.43 (0.90)	0.28 (0.53)	0.03 (0.04)	0.02 (0.08)	0.05 (0.09)
Parent divorced/separated	0.22 (0.35)	-0.15 (0.48)	-0.05 (0.28)	-0.02 (0.02)	-0.02 (0.04)	-0.02 (0.05)
School Covariates						
School avg GPA	0.57 (0.78)	1.37 (1.07)	0.60 (0.50)	0.01 (0.05)	-0.01 (0.11)	0.08 (0.10)
School avg college completion	-0.82 (1.90)	-1.43 (2.67)	-1.88 (1.58)	0.00 (0.12)	-0.06 (0.26)	-0.17 (0.23)
School avg family SES	-0.57 (0.93)	-0.24 (1.35)	-0.22 (0.78)	-0.09 (0.06)	-0.10 (0.13)	-0.10 (0.12)
School percent Asian	-2.26 (2.20)	-3.92 (4.01)	-1.94 (1.87)	0.41 (0.20)*	-0.18 (0.39)	-0.07 (0.30)
School percent Black	-0.46 (1.08)	0.48 (1.63)	1.74 (0.71)*	0.06 (0.05)	0.18 (0.11)	0.10 (0.11)
School percent Latino	-2.66 (2.20)	0.06 (3.01)	4.62 (1.54)**	-0.30 (0.17)+	0.32 (0.28)	0.00 (0.28)
Small school	-0.01 (0.36)	-0.04 (0.50)	0.38 (0.24)	0.00 (0.02)	-0.01 (0.05)	0.01 (0.04)
Large school	-0.21 (0.37)	-0.37 (0.58)	-0.30 (0.22)	0.02 (0.02)	-0.07 (0.04)	-0.04 (0.04)
School has HS grades	0.76 (0.39)+	0.81 (0.54)	0.77 (0.26)**	0.01 (0.02)	0.11 (0.06)+	0.14 (0.05)**
Urban	-0.46 (0.36)	-1.07 (0.51)*	-0.46 (0.24)+	0.01 (0.02)	-0.01 (0.04)	-0.09 (0.04)*
Rural	-0.12 (0.44)	0.08 (0.50)	0.36 (0.31)	-0.01 (0.02)	0.06 (0.06)	0.03 (0.05)
West	-0.25 (0.51)	-0.03 (0.86)	0.05 (0.32)	0.02 (0.03)	-0.05 (0.06)	-0.02 (0.05)
Midwest	-0.13 (0.33)	0.35 (0.47)	-0.07 (0.24)	0.04 (0.02)+	0.01 (0.04)	0.03 (0.04)
Northeast	-0.83 (0.39)*	-0.65 (0.56)	-0.21 (0.27)	0.01 (0.03)	-0.01 (0.04)	-0.01 (0.04)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01.

Variations in Links across the Socioeconomic Spectrum

The second aim of these analyses considered whether prospective associations between achievement and physiological health vary across both the socioeconomic spectrum and across racial/ethnic groups. In order to consider these potential variations in links across the socioeconomic spectrum, two interaction terms were entered into each model predicting physiological health: (1) an interaction term between centered, continuous measures of GPA and family SES (both at wave 1), and (2) an interaction term between the dichotomous indicator of college completion (by wave 4) and a centered, continuous measure of family SES (at wave 1). Results, seen in Table 6, suggested no evidence of variation in links between achievement and any indicators of physiological health across the socioeconomic spectrum. Additional models considered interactions in separate sets, and results replicated those of the reported models with interactions entered simultaneously (shown in Table 6).

Table 6. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analyses Considering Variations in Links between Achievement and Physiological Health Outcomes across the Socioeconomic Spectrum

	Diastolic	Systolic	Body Mass	Epstein-Barr	C-Reactive	Allostatic Load
	n =14,296	*n* =14,296	*n* =14,564	*n* =13,132	*n* =13,132	*n* =12,672
	Coef (SE)	Coef (SE)	Coef (SE)	Coef (SE)	Coef (SE)	Coef (SE)
Acadamic Achievement						
GPA	-0.14 (0.20)	-0.27 (0.29)	-0.37 (0.16)*	-0.01 (0.01)	-0.04 (0.03)	-0.03 (0.03)
College completion	-0.80 (0.33)*	-0.67 (0.37)+	-1.31 (0.21)**	-0.05 (0.02)**	-0.19 (0.04)**	-0.15 (0.04)**
Family SES	-0.14 (0.22)	-0.19 (0.35)	-0.41 (0.14)**	-0.03 (0.02)+	-0.07 (0.03)*	-0.08 (0.03)*
Interactions						
GPA X Family SES	-0.10 (0.24)	-0.05 (0.34)	-0.10 (0.23)	-0.01 (0.02)	0.01 (0.04)	-0.02 (0.04)
College X Family SES	-0.30 (0.43)	-0.37 (0.67)	-0.48 (0.40)	-0.04 (0.03)	-0.06 (0.06)	-0.05 (0.07)
Individual & Family Covariates						
Asian	1.22 (0.88)	0.45 (1.40)	-1.16 (0.54)*	-0.03 (0.05)	-0.33 (0.09)**	-0.14 (0.09)
Black	0.45 (0.59)	1.10 (0.77)	0.76 (0.50)	0.15 (0.03)**	-0.01 (0.07)	0.12 (0.08)
Latino	-0.63 (0.52)	-0.42 (0.65)	0.37 (0.42)	0.07 (0.05)	0.12 (0.07)+	0.09 (0.07)
Multiracial & other	0.81 (0.48)+	0.79 (0.62)	0.74 (0.51)	0.04 (0.03)	0.02 (0.08)	0.16 (0.08)*
Age	0.04 (0.01)**	0.02 (0.01)*	0.01 (0.01)+	0.00 (0.00)**	0.00 (0.00)	0.00 (0.00)*
Male	4.23 (0.24)**	9.34 (0.32)**	-0.12 (0.23)	-0.17 (0.02)**	-0.50 (0.03)**	0.23 (0.04)**
Low Birthweight	0.39 (0.50)	0.07 (0.68)	-0.59 (0.41)	0.00 (0.04)	0.00 (0.07)	0.02 (0.07)
Poor prior health	1.22 (0.50)*	2.28 (0.60)**	2.69 (0.39)**	0.03 (0.04)	0.28 (0.09)**	0.25 (0.08)**
Pregnancy (at wave 4)	-- --	-- --	-- --	-0.08 (0.04)*	0.75 (0.06)**	-- --
Parent single	0.77 (0.68)	0.44 (0.90)	0.29 (0.53)	0.03 (0.04)	0.02 (0.08)	0.05 (0.09)
Parent divorced/separated	0.22 (0.35)	-0.15 (0.48)	-0.06 (0.28)	-0.02 (0.02)	-0.02 (0.04)	-0.02 (0.05)
School Covariates						
School avg GPA	0.53 (0.79)	1.33 (1.07)	0.55 (0.50)	0.01 (0.05)	-0.02 (0.11)	0.08 (0.10)
School avg college completion	-0.85 (1.91)	-1.44 (2.68)	-1.92 (1.57)	0.00 (0.12)	-0.06 (0.26)	-0.18 (0.23)
School avg family SES	-0.47 (0.94)	-0.13 (1.36)	-0.08 (0.79)	-0.08 (0.06)	-0.08 (0.13)	-0.09 (0.12)
School percent Asian	-0.46 (1.08)	0.48 (1.63)	1.74 (0.71)*	0.06 (0.05)	0.18 (0.11)	-0.06 (0.30)
School percent Black	-2.59 (2.20)	0.14 (3.01)	4.72 (1.53)**	-0.29 (0.17)+	0.33 (0.28)	0.10 (0.11)
School percent Latino	-2.18 (2.20)	-3.83 (4.00)	-1.83 (1.90)	0.42 (0.20)*	-0.16 (0.38)	0.02 (0.28)
Small school	-0.01 (0.36)	-0.03 (0.50)	0.38 (0.24)	0.00 (0.02)	-0.01 (0.05)	0.01 (0.04)
Large school	-0.23 (0.37)	-0.39 (0.58)	-0.33 (0.22)	0.02 (0.02)	-0.07 (0.04)+	-0.04 (0.04)
School has HS grades	0.74 (0.39)+	0.80 (0.54)	0.75 (0.26)**	0.01 (0.02)	0.10 (0.06)	0.14 (0.05)**
Urban	-0.46 (0.36)	-1.07 (0.51)*	-0.45 (0.24)+	0.01 (0.02)	-0.01 (0.04)	-0.09 (0.04)*
Rural	-0.10 (0.44)	0.09 (0.51)	0.38 (0.31)	0.00 (0.02)	0.07 (0.06)	0.03 (0.05)
West	-0.27 (0.51)	-0.07 (0.85)	0.01 (0.32)	0.01 (0.03)	-0.06 (0.06)	-0.03 (0.05)
Midwest	-0.13 (0.33)	0.35 (0.47)	-0.07 (0.24)	0.04 (0.02)+	0.01 (0.04)	0.03 (0.04)
Northeast	-0.83 (0.39)*	-0.65 (0.56)	-0.22 (0.28)	0.01 (0.03)	-0.01 (0.05)	-0.01 (0.04)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01.

Variations in Links across Racial and Ethnic Groups

In order to consider potential variability in prospective links between academic achievement and physiological heath across racial/ethnic groups, eight interaction terms were entered into each multilevel model predicting physiological health. These interaction terms included four interactions between centered, continuous measures of GPA (at wave 1) and dichotomous indicators reflecting students' identified racial/ethnic group (non-Hispanic Asian, non-Hispanic Black, Latino, and multiracial/other), and four interaction terms between dichotomous indicators of college completion (by wave 4) and racial/ethnic group identification.

Contrary to models considering variation in links across the socioeconomic spectrum, however, interaction results across racial/ethnic groups suggested divergent patterns in links: across all interactions tested, 6 of the 48 emerged as significant, which was above the rate expected by chance, with an additional interaction approaching significance (see Table 7). Specifically, a modest pattern emerged in which negative associations between achievement and later inflammation were stronger among non-Hispanic Asian adolescents compared to their White peers; this pattern emerged for links between GPA and later BMI as well as for associations between college completion and levels of systolic blood pressure (see Figures 2 and 3). As indicated in the figures, slopes that significantly differed from the White referent group are bolded in black. Slopes that did not significantly differ from the White referent group are shown for demonstrative purposes, but are displayed in gray. For Latino adolescents, one significant interaction term suggested that links between GPA and Epstein-Barr virus antibodies were actually positive, suggesting that heightened grade point average was prospectively linked with

heightened levels of inflammation, compared to their non-Hispanic White peers for whom heightened GPA was associated with lower levels of inflammation (see Figure 4).

The most consistent pattern of divergence in these models emerged for links between college completion and physiological health for non-Hispanic Black adolescents compared to their White peers. Specifically, as seen in Figures 5 - 8, college completion predicted higher inflammation for non-Hispanic Black adolescents but, conversely, lower levels of inflammation for their White peers on measures of body mass index, Epstein-Barr virus antibodies ($p < .10$), C-reactive protein levels, and allostatic load. Once again, additional models considered interactions in separate sets; results replicated those of models with interactions entered simultaneously.

Table 7. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analyses Considering Variations in Links between Achievement and Physiological Health Outcomes across Racial/Ethnic Groups

	Diastolic Blood Pressure *n* =14,296 Coef (SE)	Systolic Blood Pressure *n* =14,296 Coef (SE)	Body Mass Index *n* =14,564 Coef (SE)	Epstein-Barr Virus Antibodies *n* =13,132 Coef (SE)	C-Reactive Protein Levels *n* =13,132 Coef (SE)	Allostatic Load *n* =12,672 Coef (SE)
Acadamic Achievement						
GPA	-0.08 (0.20)	-0.20 (0.29)	-0.36 (0.14)*	-0.01 (0.01)	-0.03 (0.03)	-0.03 (0.03)
College completion	-0.82 (0.26)**	-0.74 (0.41)+	-1.24 (0.23)**	-0.05 (0.02)**	-0.17 (0.04)**	-0.13 (0.04)**
Race/Ethnicity						
Asian	1.40 (0.95)	0.62 (1.51)	-0.69 (0.52)	-0.02 (0.06)	-0.34 (0.10)**	-0.11 (0.09)
Black	0.51 (0.57)	1.07 (0.74)	0.96 (0.48)*	0.15 (0.03)**	0.01 (0.07)	0.16 (0.08)*
Latino	-0.61 (0.52)	-0.41 (0.65)	0.42 (0.43)	0.09 (0.05)+	0.15 (0.07)*	0.11 (0.07)
Multiracial & other	0.92 (0.54)+	0.97 (0.7)	0.84 (0.56)	0.04 (0.03)	0.03 (0.09)	0.17 (0.09)*
Interactions						
GPA X Asian	0.11 (0.89)	0.38 (1.31)	-1.23 (0.62)*	0.00 (0.07)	0.11 (0.12)	0.00 (0.09)
GPA X Black	0.26 (0.43)	0.23 (0.61)	0.03 (0.44)	-0.02 (0.04)	-0.03 (0.08)	0.01 (0.07)
GPA X Latino	0.87 (0.54)	1.30 (0.80)	0.23 (0.39)	0.10 (0.04)**	0.01 (0.07)	0.08 (0.06)
GPA X Multiracial/Other	-0.17 (0.79)	-0.08 (1.17)	-0.33 (0.72)	0.04 (0.04)	0.01 (0.11)	-0.05 (0.12)
College X Asian	-3.18 (1.95)	-4.73 (2.24)*	-0.72 (0.68)	-0.06 (0.06)	-0.31 (0.20)	-0.30 (0.22)
College X Black	0.12 (0.66)	-0.77 (0.96)	1.65 (0.51)**	0.08 (0.05)+	0.21 (0.10)*	0.31 (0.09)**
College X Latino	-1.15 (0.82)	-1.81 (1.24)	0.08 (0.96)	0.02 (0.08)	0.19 (0.15)	0.05 (0.14)
College X Multiracial/Other	1.26 (1.34)	2.06 (2.57)	1.18 (1.08)	-0.03 (0.08)	0.10 (0.16)	0.17 (0.22)
Individual & Family Covariates						
Age	0.04 (0.01)**	0.02 (0.01)*	0.01 (0.01)+	0.00 (0.00)**	0.00 (0.00)	0.00 (0.00)**
Male	4.28 (0.23)**	9.40 (0.31)**	-0.09 (0.22)	-0.16 (0.02)**	-0.54 (0.03)**	0.24 (0.04)**
Low Birthweight	0.40 (0.50)	0.08 (0.68)	-0.59 (0.41)	0.00 (0.04)	0.00 (0.07)	0.02 (0.07)
Poor prior health	1.24 (0.49)*	2.33 (0.60)**	2.66 (0.41)**	0.03 (0.04)	0.27 (0.08)**	0.25 (0.08)**
Pregnancy (at wave 4)	-- --	-- --	-- --	-0.08 (0.04)+	0.75 (0.06)**	-- --
Family SES	-0.16 (0.22)	-0.22 (0.34)	-0.42 (0.13)**	-0.03 (0.02)+	-0.07 (0.03)*	-0.08 (0.03)**
Parent single	0.77 (0.66)	0.39 (0.87)	0.36 (0.51)	0.04 (0.04)	0.03 (0.08)	0.06 (0.09)
Parent divorced/separated	0.20 (0.34)	-0.19 (0.46)	-0.06 (0.27)	-0.02 (0.02)	-0.02 (0.04)	-0.02 (0.04)
School Covariates						
School avg GPA	0.52 (0.77)	1.34 (1.06)	0.47 (0.49)	0.00 (0.05)	-0.01 (0.11)	0.05 (0.10)
School avg college completion	-0.93 (1.89)	-1.48 (2.64)	-2.04 (1.50)	0.01 (0.12)	-0.09 (0.25)	-0.32 (0.15)*
School avg family SES	-0.54 (0.92)	-0.29 (1.33)	-0.09 (0.74)	-0.09 (0.07)	-0.09 (0.13)	-0.09 (0.12)
School percent Asian	-2.18 (2.13)	-3.84 (3.82)	-1.88 (1.85)	0.40 (0.20)*	-0.25 (0.39)	-0.07 (0.29)
School percent Black	-0.50 (1.05)	0.44 (1.58)	1.71 (0.69)*	0.06 (0.05)	0.18 (0.11)	0.11 (0.11)
School percent Latino	-2.87 (2.16)	-0.26 (2.96)	4.52 (1.53)**	-0.29 (0.17)+	0.28 (0.28)	0.06 (0.25)
Small school	-0.01 (0.35)	-0.01 (0.49)	0.33 (0.24)	0.00 (0.02)	-0.02 (0.05)	0.00 (0.04)
Large school	-0.22 (0.36)	-0.36 (0.57)	-0.33 (0.22)	0.02 (0.02)	-0.08 (0.04)+	-0.05 (0.04)
School has HS grades	0.74 (0.39)+	0.80 (0.52)	0.74 (0.26)**	0.01 (0.02)	0.11 (0.05)*	0.13 (0.05)**
Urban	-0.44 (0.35)	-1.03 (0.50)*	-0.46 (0.23)+	0.01 (0.02)	-0.01 (0.04)	-0.09 (0.04)**
Rural	-0.10 (0.44)	0.10 (0.51)	0.37 (0.30)	-0.01 (0.02)	0.06 (0.06)	0.03 (0.05)
West	-0.25 (0.50)	-0.03 (0.82)	0.03 (0.31)	0.02 (0.03)	-0.03 (0.06)	-0.03 (0.05)
Midwest	-0.13 (0.33)	0.35 (0.46)	-0.06 (0.23)	0.04 (0.02)+	0.02 (0.04)	0.03 (0.04)
Northeast	-0.79 (0.39)*	-0.60 (0.56)	-0.17 (0.27)	0.01 (0.03)	-0.01 (0.05)	0.00 (0.04)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01.

Figure 2. Links between Grade Point Average and Body Mass Index across Racial/Ethnic Groups

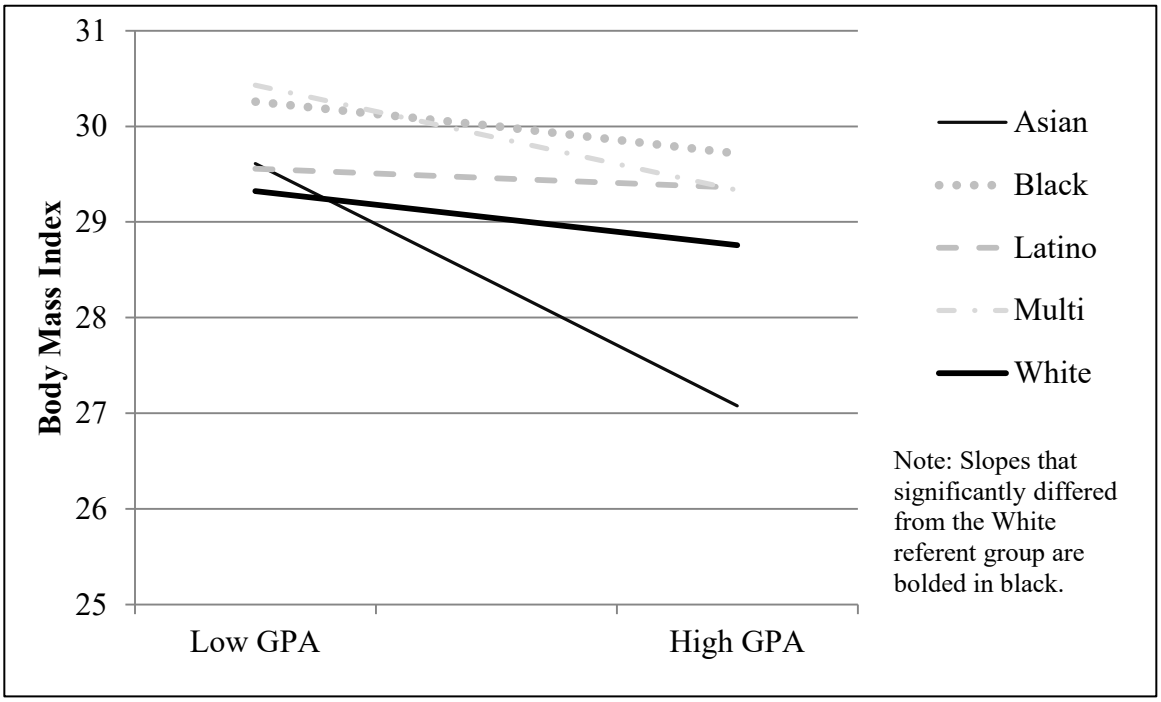


Figure 3. Links between College Completion and Systolic Blood Pressure across Racial/Ethnic Groups

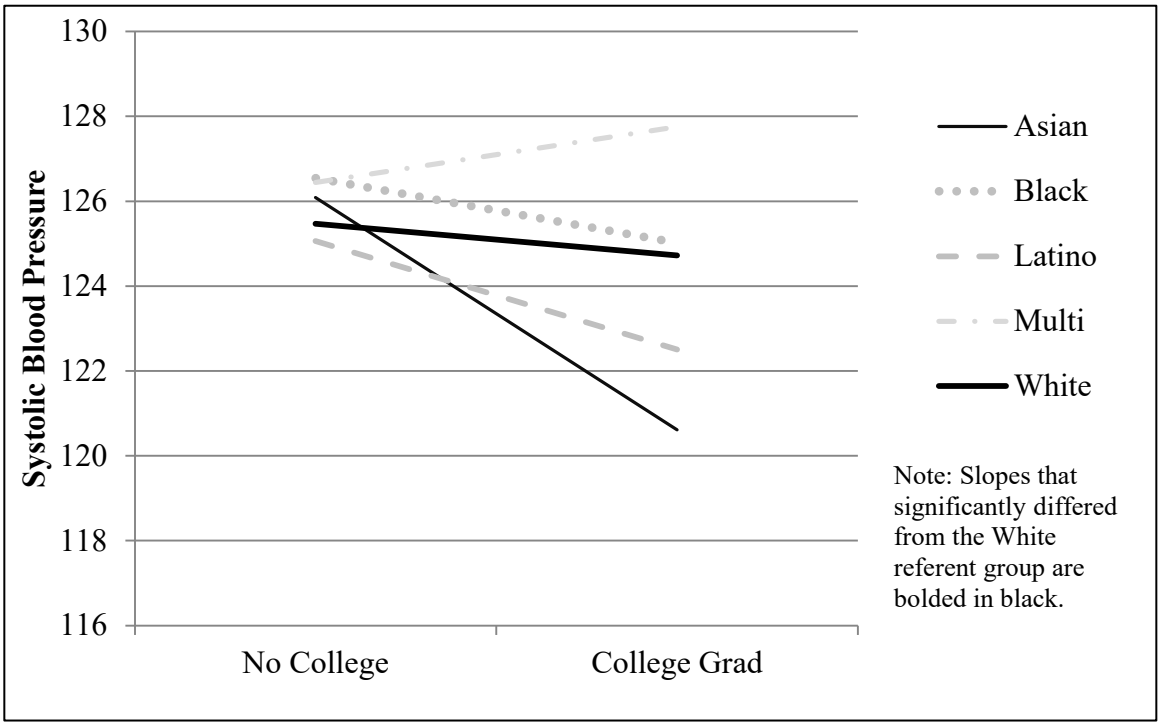


Figure 4. Links between Grade Point Average and Epstein-Barr Virus Antibodies across Racial/Ethnic Groups

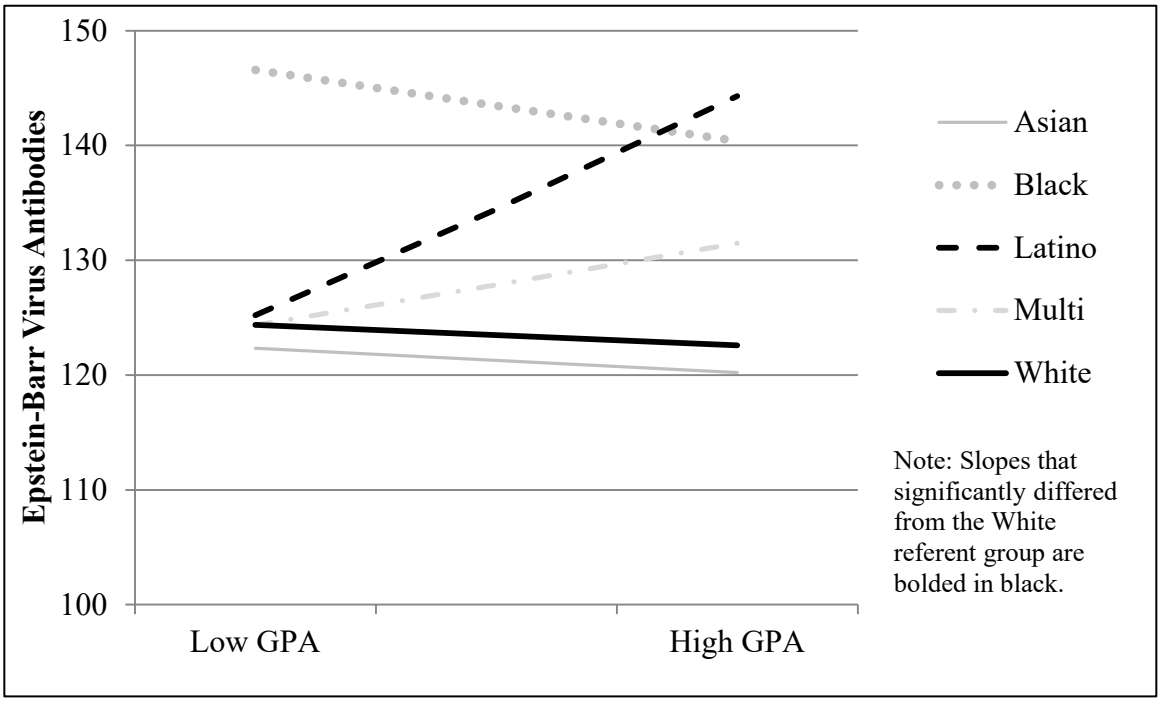


Figure 5. Links between College Completion and Body Mass Index across Racial/Ethnic Groups

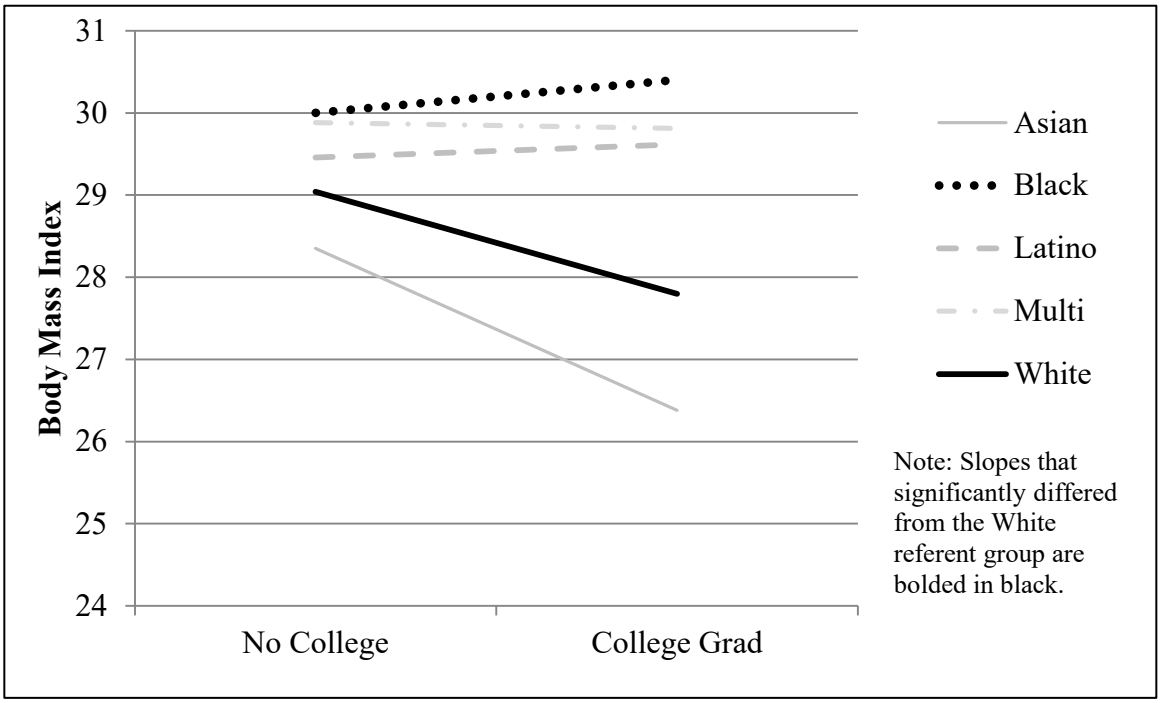


Figure 6. Links between College Completion and Epstein-Barr Virus Antibodies across Racial/Ethnic Groups

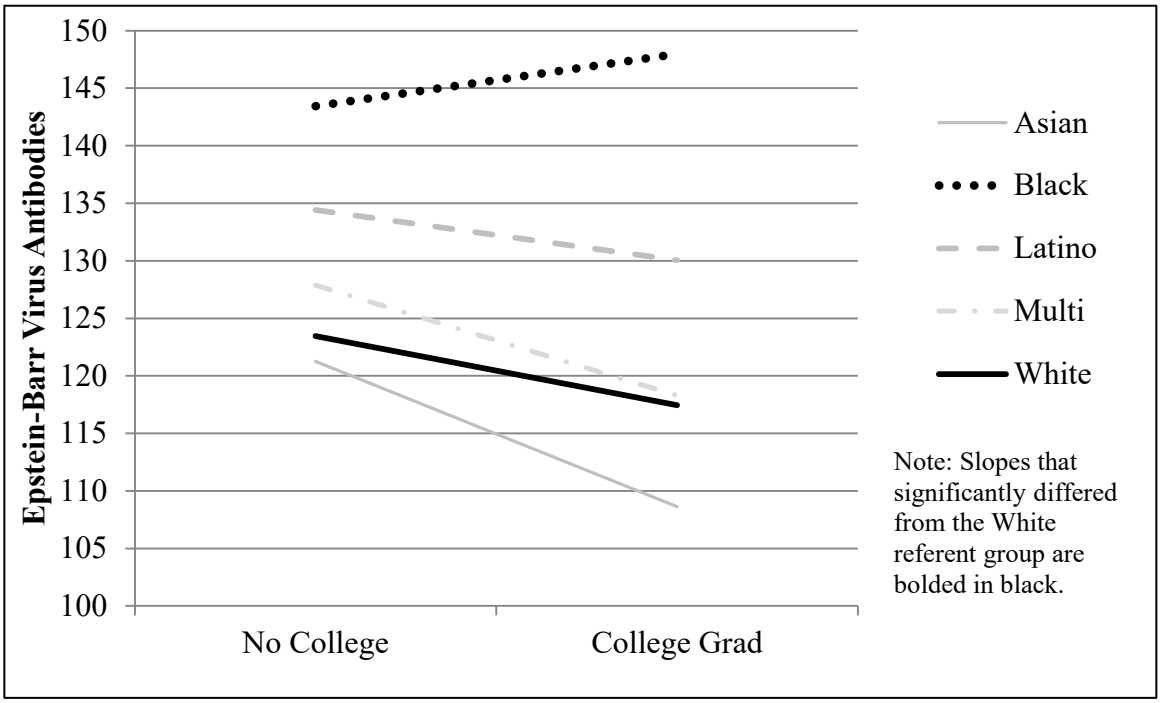


Figure 7. Links between College Completion and C-Reactive Protein Levels across Racial/Ethnic Groups

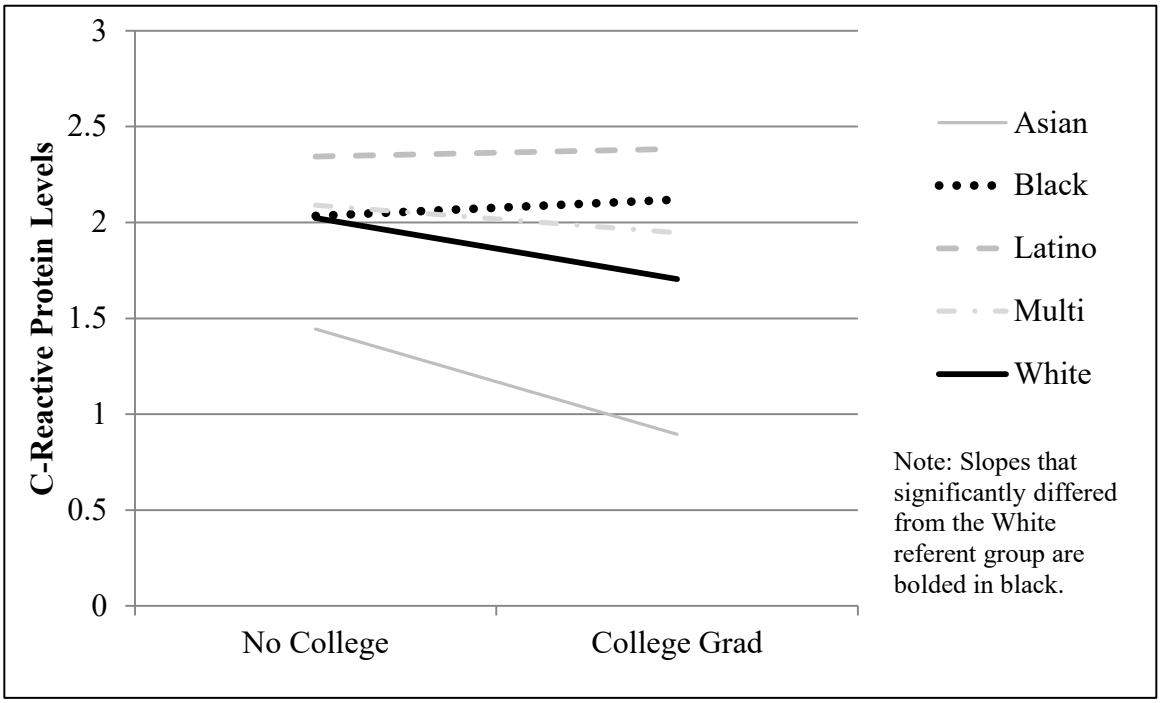
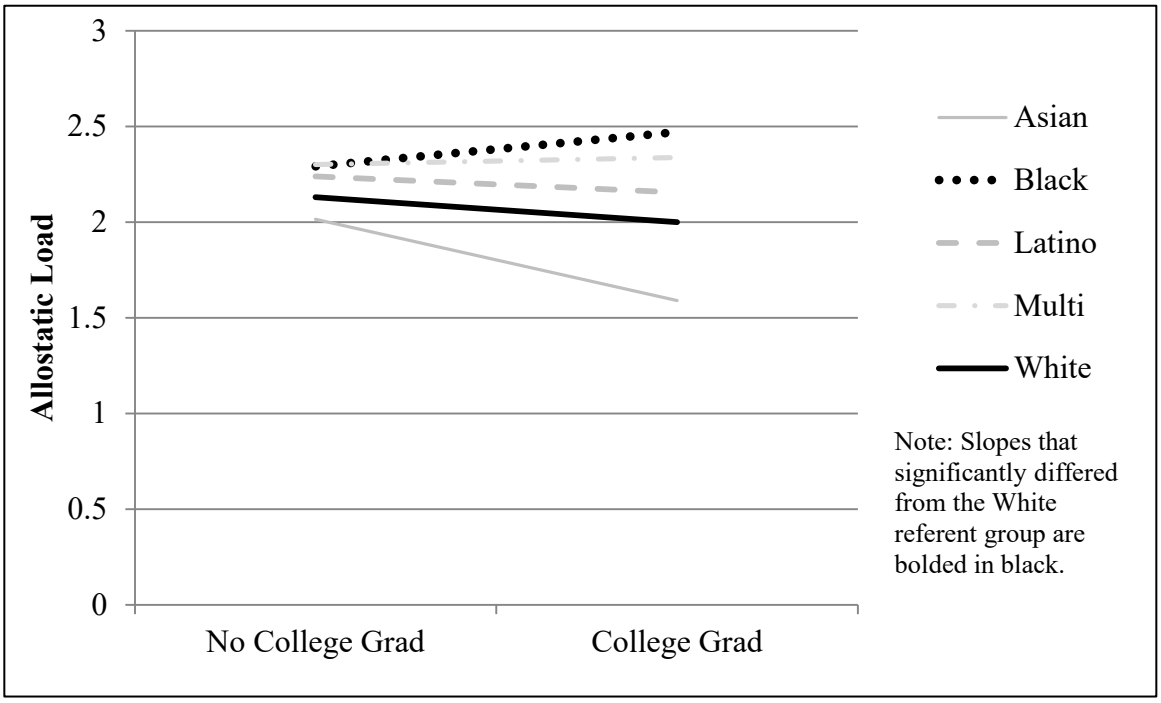


Figure 8. Links between College Completion and Allostatic Load across Racial/Ethnic Groups



The School's Role in Augmenting Links between Academic Achievement, Individual Characteristics, and Physiological Health: School-wide SES

The final aim of these analyses considered the potential moderating role of school-wide characteristics on links among achievement, individual characteristics, and later physiological health. In order to test the role of school-wide socioeconomic status, two three-way interactions were entered into each model of interest: (1) an interaction term between centered, continuous measures of GPA, family SES, and school-wide average family SES, and (2) an interaction term between the dichotomous indicator of college completion and centered, continuous measures of family SES and school-wide average family SES. In addition to these three-way interaction terms, all models incorporated both main effects and lower-order interactions between all terms considered in the three-way interactions. Results, displayed in Table 8, suggested that low levels of school-wide socioeconomic status augmented links between family SES and later measures of blood pressure. Specifically, low school SES reversed associations between GPA and blood pressure at low levels of family SES, suggesting that students from low SES families attending low SES schools demonstrated some health costs of achieving high GPA; Figures 9 and 10 display these trends.

Table 8. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analyses Considering School-wide Socioeconomic Status as a Moderator of Links between Achievement, Family SES, and Physiological Health Outcomes

	Diastolic Blood Pressure *n* =14,296 Coef (SE)	Systolic Blood Pressure *n* =14,296 Coef (SE)	Body Mass Index *n* =14,564 Coef (SE)	Epstein-Barr Virus Antibodies *n* =13,132 Coef (SE)	C-Reactive Protein Levels *n* =13,132 Coef (SE)	Allostatic Load *n* =12,672 Coef (SE)
Acadamic Achievement						
GPA	-0.25 (0.20)	-0.40 (0.30)	-0.42 (0.16)**	-0.01 (0.01)	-0.04 (0.03)	-0.04 (0.03)
College completion	-0.77 (0.33)*	-0.61 (0.37)	-1.27 (0.21)**	-0.05 (0.02)**	-0.20 (0.04)**	-0.15 (0.04)**
Family SES	-0.15 (0.24)	-0.19 (0.37)	-0.41 (0.15)**	-0.03 (0.02)+	-0.08 (0.03)*	-0.09 (0.03)*
School SES	-0.41 (1.02)	-0.14 (1.48)	-0.08 (0.83)	-0.07 (0.06)	-0.10 (0.15)	-0.13 (0.15)
Two Way Interactions						
GPA X Family SES	-0.03 (0.25)	0.01 (0.36)	-0.08 (0.25)	-0.01 (0.02)	0.00 (0.04)	-0.02 (0.04)
College X Family SES	-0.33 (0.52)	-0.44 (0.80)	-0.50 (0.47)	-0.03 (0.04)	-0.06 (0.07)	-0.07 (0.09)
Family SES X School SES	-0.55 (0.60)	-0.26 (0.78)	0.10 (0.44)	0.00 (0.04)	-0.03 (0.09)	0.03 (0.08)
GPA X School SES	-0.86 (0.72)	-0.89 (0.96)	-0.40 (0.53)	0.00 (0.05)	0.05 (0.09)	-0.05 (0.09)
College X School SES	1.47 (1.07)	1.66 (1.54)	0.32 (0.83)	-0.14 (0.07)*	-0.09 (0.15)	0.00 (0.17)
Three Way Interactions						
GPA X Family SES X School SES	1.47 (0.59)*	1.77 (0.83)*	0.70 (0.41)+	0.02 (0.04)	0.04 (0.08)	0.12 (0.08)
College X Family SES X School SES	-0.69 (1.04)	-1.33 (1.48)	-0.69 (0.79)	0.05 (0.08)	0.10 (0.14)	0.02 (0.16)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01. All covariates listed in Tables 1 and 2 are also included in these models.

Figure 9. Links between Grade Point Average and Diastolic Blood Pressure across Family and School Socioeconomic Status

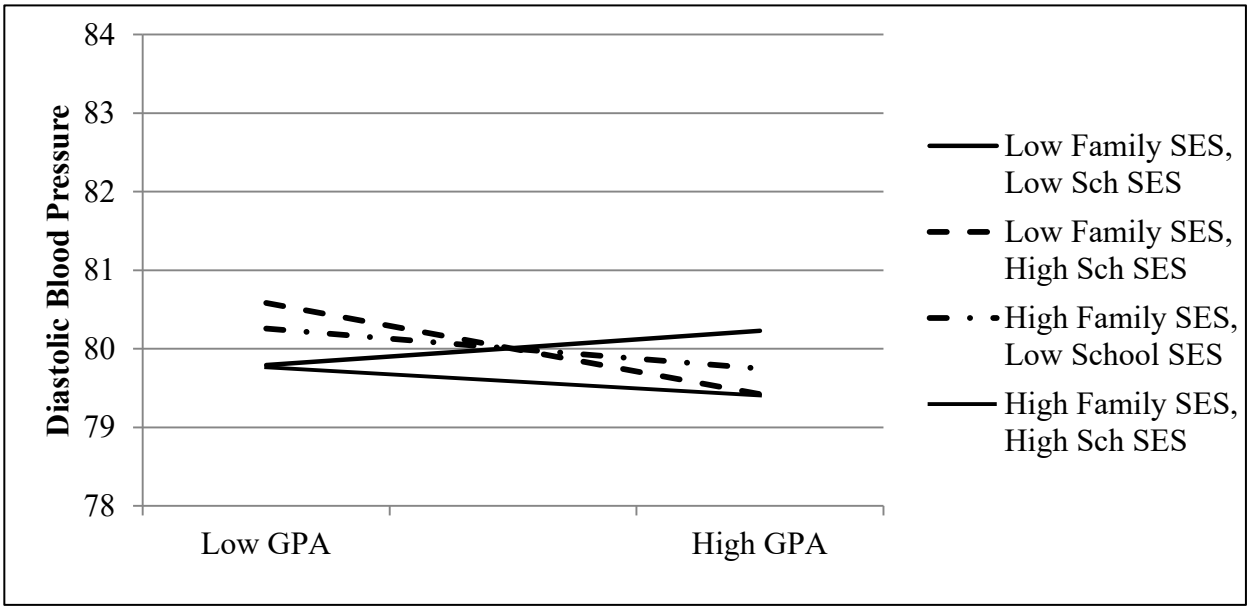
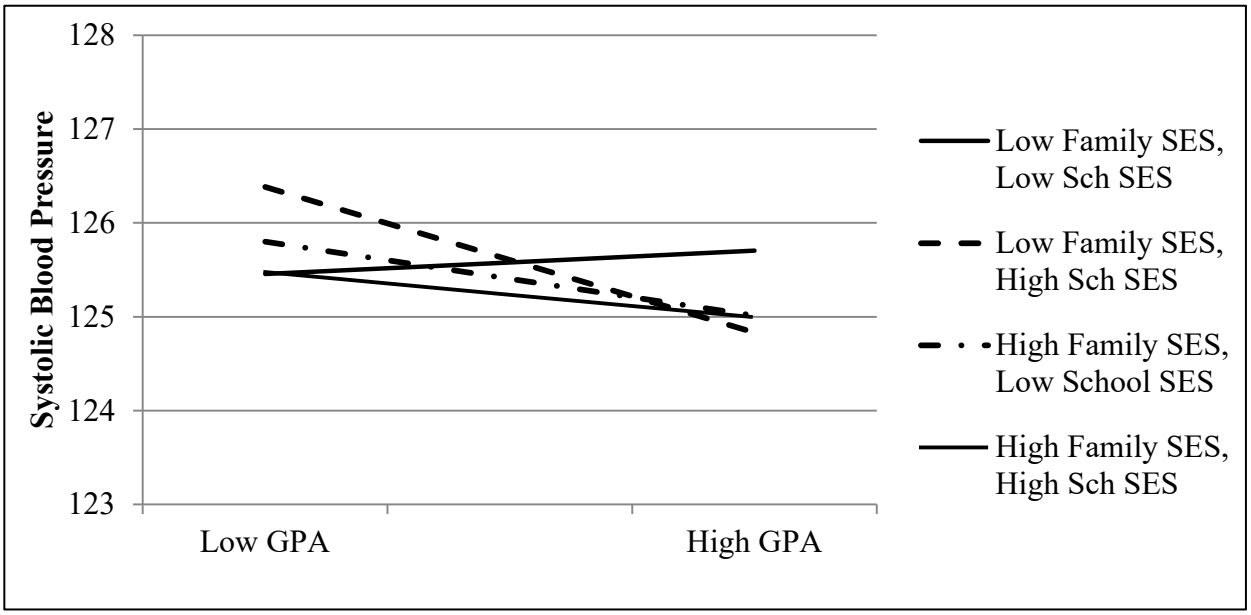


Figure 10. Links between Grade Point Average and Systolic Blood Pressure across Family and School Socioeconomic Status



The School's Role in Augmenting Links between Academic Achievement, Individual Characteristics, and Physiological Health: School-wide Perceptions of Prejudice and Unfair Treatment

The final aim of these analyses also considered the potentially moderating role of school-wide perceptions of student prejudice and teacher unfair treatment on links among achievement, racial/ethnic group membership, and physiological health. To test this possibility, three way interactions were once again entered into analyses of interest. Initial results, available in Appendix Table A.6, suggested that school-wide perceptions of student prejudice were more consistently linked with outcomes of interest than measures of perceived teacher unfair treatment. Thus, models considering only student perceptions of peer prejudice as a main effect and moderator are presented in Table 9 for the sake of parsimony. As seen in Table 9, eight three way interaction terms were entered into each model of interest: four interactions between centered, continuous measures of GPA, dichotomous indicators reflecting students' identified racial/ethnic group membership, and centered, continuous measures of school-wide perceptions of peer prejudice, and four interaction terms between dichotomous indicators of college completion, dichotomous indicators of racial/ethnic group identification, and centered, continuous measures of perceived peer prejudice. Additional models considered race-specific measures of school-wide prejudice; results replicated those presented in Table 9.

No evidence of school-level moderation on links between achievement and physiological health across racial/ethnic groups emerged. Although not a primary research question in the current study, these models did suggest, however, that links

between school-wide perceptions of peer prejudice and later physiological health varied across groups, as seen in Appendix Figures A.1 – A.4.

Table 9. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analyses Considering School-wide Perceptions of Peer Prejudice as a Moderator of Links between Achievement and Physiological Health Outcomes across Racial/Ethnic Groups

	Diastolic Blood Pressure *n* =14,296 Coef (SE)	Systolic Blood Pressure *n* =14,296 Coef (SE)	Body Mass Index *n* =14,564 Coef (SE)	Epstein-Barr Virus Antibodies *n* =13,132 Coef (SE)	C-Reactive Protein Levels *n* =13,132 Coef (SE)	Allostatic Load *n* =12,672 Coef (SE)
Acadamic Achievement						
GPA	-0.13 (0.21)	-0.24 (0.31)	-0.37 (0.15)*	-0.01 (0.01)	-0.04 (0.03)	-0.03 (0.03)
College completion	-0.85 (0.27)**	-0.75 (0.40)+	-1.25 (0.23)**	-0.04 (0.02)*	-0.17 (0.04)**	-0.13 (0.04)**
Race/Ethnicity						
Asian	0.89 (0.79)	-0.06 (1.10)	-0.90 (0.52)+	-0.02 (0.06)	-0.37 (0.10)**	-0.15 (0.09)
Black	0.32 (0.55)	0.98 (0.73)	0.88 (0.48)+	0.15 (0.03)**	-0.01 (0.07)	0.15 (0.08)+
Latino	-0.77 (0.50)	-0.54 (0.61)	0.36 (0.44)	0.09 (0.05)+	0.13 (0.08)+	0.10 (0.07)
Multiracial & other	0.76 (0.53)	0.80 (0.70)	0.76 (0.57)	0.04 (0.03)	0.02 (0.09)	0.16 (0.09)+
School Perceptions of Prejudice	1.41 (0.79)+	0.91 (1.32)	0.37 (0.51)	0.04 (0.04)	0.11 (0.10)	0.10 (0.09)
Two Way Interactions						
GPA X Asian	-0.02 (0.99)	0.04 (1.46)	-1.32 (0.62)*	0.00 (0.07)	0.12 (0.12)	0.02 (0.10)
GPA X Black	0.34 (0.45)	0.30 (0.63)	-0.01 (0.48)	-0.02 (0.04)	-0.02 (0.08)	0.00 (0.07)
GPA X Latino	0.93 (0.54)+	1.31 (0.81)	0.22 (0.40)	0.10 (0.04)*	0.01 (0.07)	0.08 (0.06)
GPA X Multiracial/Other	-0.07 (0.78)	-0.07 (1.16)	-0.35 (0.73)	0.04 (0.05)	0.02 (0.11)	-0.05 (0.12)
College X Asian	-2.70 (1.92)	-3.80 (1.86)*	-0.51 (0.71)	-0.08 (0.07)	-0.37 (0.19)+	-0.38 (0.22)
College X Black	-0.11 (0.70)	-1.14 (0.97)	1.49 (0.53)**	0.07 (0.05)	0.21 (0.10)*	0.28 (0.10)**
College X Latino	-1.13 (0.84)	-1.73 (1.25)	0.09 (0.97)	0.02 (0.08)	0.18 (0.15)	0.04 (0.14)
College X Multiracial/Other	1.31 (1.35)	2.03 (2.59)	1.15 (1.09)	-0.04 (0.08)	0.09 (0.16)	0.15 (0.22)
Prejudice X Asian	-8.06 (7.87)	-13.9 (13.66)	-3.75 (2.69)	-0.08 (0.26)	-0.35 (0.59)	-0.52 (0.57)
Prejudice X Black	1.89 (1.28)	3.09 (1.76)+	1.31 (0.92)	0.07 (0.08)	0.39 (0.19)*	0.33 (0.14)*
Prejudice X Latino	3.91 (1.64)*	4.33 (2.28)+	2.48 (1.12)*	0.10 (0.14)	0.18 (0.21)	0.12 (0.25)
Prejudice X Multiracial/Other	1.97 (1.44)	-0.28 (2.28)	-0.54 (1.03)	-0.11 (0.10)	-0.02 (0.23)	-0.08 (0.24)
GPA X Prejudice	0.47 (0.63)	0.34 (0.87)	0.04 (0.39)	0.00 (0.04)	0.03 (0.08)	0.03 (0.09)
College X Prejudice	-0.46 (1.05)	0.43 (1.70)	-0.17 (0.55)	0.00 (0.06)	-0.16 (0.13)	-0.17 (0.12)
Three Way Interactions						
GPA X Asian X Prejudice	0.19 (5.10)	-0.11 (7.70)	0.49 (2.57)	0.10 (0.33)	0.30 (0.65)	0.57 (0.70)
GPA X Black X Prejudice	-0.81 (1.44)	-0.58 (2.01)	-0.75 (1.36)	0.02 (0.11)	-0.19 (0.23)	-0.25 (0.20)
GPA X Latino X Prejudice	1.26 (2.48)	1.63 (3.35)	1.23 (2.00)	-0.07 (0.18)	0.16 (0.31)	0.11 (0.34)
GPA X Multi/Other X Prejudice	0.00 (2.49)	0.66 (3.63)	0.23 (1.57)	0.01 (0.12)	0.10 (0.30)	-0.02 (0.33)
College X Asian X Prejudice	9.70 (12.3)	8.97 (11.95)	4.82 (4.40)	0.01 (0.44)	-0.93 (0.83)	-1.02 (1.01)
College X Black X Prejudice	-2.35 (2.30)	-3.75 (3.32)	-1.39 (1.40)	0.00 (0.13)	0.01 (0.24)	-0.13 (0.28)
College X Latino X Prejudice	-3.20 (3.58)	1.24 (4.62)	-1.17 (2.49)	0.33 (0.35)	0.17 (0.61)	0.26 (0.55)
College X Multi/Other X Prejudice	-1.82 (2.88)	-0.36 (4.82)	0.54 (2.54)	0.31 (0.22)	-0.09 (0.49)	0.15 (0.49)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01. All covariates listed in Tables 1 and 2 are also included in these models.

Alternate Model Specifications

A variety of additional analyses were considered in order to probe the robustness of the previously discussed results. These included models (1) assessing waist-to-height ratio in order to assuage concerns over the validity of BMI as an indicator of cardiometabolic risk, (2) considering an average of continuous z-scores of biomarkers as an alternate measure of allostatic load, (3) incorporating a variety of alternate measures of socioeconomic status, and (4) considering associations across different analytic samples in order to better attend to the many complex social factors that contribute to racial/ethnic health inequities in the United States. Results from alternate models specifications, presented in Appendix B, were generally consistent with those presented above.

CHAPTER 5: DISCUSSION

Emerging evidence has challenged the assumption that academic and employment success broadly grant individuals improved physical health (Adler, 2013; Adler et al., 1994; Antonovsky, 1967; Cohen et al., 2010). Specifically, a series of recent studies considering links between academic and social competence and physiological health among socioeconomically disadvantaged African American adolescents has suggested that demonstrating such hypothesized correlates of health benefits may actually presage health risks among this particular population (Brody et al., 2013; Chen et al., 2014; Miller et al., 2015). The authors point to the myriad contextual barriers to success that this particular sample may encounter alongside striving for academic success, including both socioeconomic disadvantage and racial/ethnic marginalization in American society, and argue that navigating the combination of such stressors while achieving academically may require persistent activation of stress response systems. This repeated triggering of stress responses, in turn, is hypothesized to lead to dysregulation, inflammation, and compromised health (e.g., McEwen, 1998).

While this innovative work has drawn attention—both in academia and in the popular press—to the potential for variation in pathways between achievement and health, it has also raised a number of important issues for consideration. For example, the narrowness of the analytic samples—socioeconomically disadvantaged African American adolescents—makes it difficult to discern if reversals in links between achievement and health emerged as a function of striving for success amidst the stressful experiences of socioeconomic disadvantage or those of racial marginalization and oppression. Additionally, the relatively homogeneous contexts that adolescents were drawn from—

concentrated areas in the rural South—make drawing inferences about the role of proximal contexts in these links difficult.

In order to extend this emerging line of research and to begin to address such issues, the present dissertation research had a number of goals. Specifically, this work sought to clarify links between achievement and health while attending to potential variation in links *both* across the socioeconomic spectrum and across racial/ethnic groups. Additionally, school-level factors were taken into account and explored as potential augmenting mechanisms in these links among a sample drawn from a nationally representative data source. Findings replicated links between select indicators of academic achievement and later physiological health, but also suggested that such links were not shared broadly by all youth. These divergent results, which emerged among only specific racial/ethnic subgroups, suggest the potential role of social and contextual factors in contributing to inequities in health payoffs of educational success. However, the school-level factors considered in the current analyses did not appear to augment links among achievement, individual characteristics, and physiological health, pointing to the importance of future research considering alternate social and contextual mechanisms in these relationships.

Understanding Links between Achievement and Health

The first goal of this dissertation research sought to establish prospective associations between academic achievement, characterized as grade point average and self-reported academic effort at age 15 and college completion by age 29, and a variety of indicators of physiological health at age 29. Drawing on evidenced links among academic competence, economic success, and healthy functioning (Adler, 2013; French, Homer,

Popovici, & Robins, 2015; Kerckhoff, Raudenbush, & Glennire, 2001), it was expected that heightened levels of achievement would be associated with lesser levels of inflammation in later life. Alternatively, it was also hypothesized that neutral links might emerge, with variation across demographic factors (e.g., Brody et al., 2013; Miller et al., 2015) masking significant links among subgroups.

Results of models considering a range of achievement indicators suggested that links between achievement and health differed across indicators of academic success. Academic effort did not emerge as significantly linked with any indicators of physiological health. Subsequent analyses considering links between effort and physiological health across both the socioeconomic spectrum and across racial and ethnic groups provided no evidence to suggest that significant links were masked by cross-over interactions. The lack of associations between youth's self-report of their own academic effort and their later physiological functioning was unexpected, given that this particular measure was intended to tap into students' self-control to do well in school, and self-control has been linked with physiological health in prior research (e.g., Miller et al., 2015). These null associations may be due to limitations of the current study's particular measure; much of the recent research on which this work builds has utilized well-validated and reliable instruments drawn from multiple reporters to assess self-control, such as the Self-Control Inventory (Humphrey, 1982) and the Self-Regulation Questionnaire (Brown, Miller, & Lawendowski, 1999). Due to data restrictions, the current study was not able to utilize such direct measures of self-control or self-regulation in participants, and thus may not have tapped into students' true abilities to flexibly monitor and adapt their behavior in order to achieve goals, such as doing well in school.

Alternatively, these null results may be attributable to the 14-year lag between the assessment of academic effort and physiological health outcomes. Prior prospective research linking self-control with physiological stress responses has spanned five (Miller et al., 2015) to eight years (Brody et al., 2013), suggesting that the strength of associations may have faded during the intervening years in the current study.

On the other hand, grade point average and, more consistently, college completion did emerge as linked with later physiological health. GPA was only weakly linked with later health in the full sample, with heightened adolescent GPA prospectively linked with lessened body mass index in early adulthood. No significant associations emerged in relation to other physiological health measures, but the coefficients for the remaining five outcomes were also negative. College completion, however, was significantly and negatively associated with inflammation across all six outcomes of interest. According to a wealth of research, these findings may be attributable to a variety of factors, including greater access to health-promoting resources as well as improvements in built and social environments (see Adler, 2013 for review).

It is important to note that these results emerged in models that controlled for a variety of theoretically and empirically relevant covariates including indicators of prior physical health, which helped to more accurately consider changes in health status over the waves of interest, and family socioeconomic resources, which helped to account for the intergenerational transmission of resources and prestige that can greatly influence health (Braveman, et al., 2005). It is also interesting to note, however, that the most consistent predictor of health in the current study, college completion, reflects educational success achieved during young adulthood as opposed to academic success

achieved during adolescence. Thus, the length of time between the completion of college and the outcomes of interest is substantially shorter, potentially implying that significant associations between educational success and health may be time-limited than the other measures of achievement in the current study allowed for.

Despite this robust pattern linking achievement, particularly college completion, and later health, it is important to consider the practical significance of these findings. The effect sizes of GPA and college completion on physiological health in young adulthood were consistently small, ranging from .04 to .16 *SD*s. To consider the practical significance of such effect sizes, it is helpful to compare them to effects of other, more established variables considered in the analyses. For example, effects of academic attainment on physiological health were similar to the difference between having poor prior health versus having good or excellent prior health, which was associated with a .17 *SD* shift in diastolic blood pressure and shifts of .12 *SD* and .20 *SD* in systolic blood pressure and allostatic load, respectively. Together, these results provide limited support for models of upward mobility and resulting physical health outcomes, in which education is hypothesized to be a great equalizer (Adler, 2013).

Consistent Links across the Socioeconomic Spectrum

The second goal of this research considered potential variations in associations between academic achievement and physiological health across the socioeconomic spectrum. Drawing on recent evidence suggesting that links between achievement and health may reverse at the lowest end of the socioeconomic spectrum (Miller et al., 2015), it was expected that greater socioeconomic resources would amplify positive associations between achievement and health while adolescents with fewer socioeconomic resources

would experience weakened—or even reversed—associations between achievement and health. It was hypothesized that such variation would emerge as a function of variations in the extent of contextual disadvantage that adolescents experienced while striving for academic success, with achievement presaging less optimal physiological health among adolescents who experienced socioeconomic disadvantage concurrently with the stresses associated with striving for academic success.

Contrary to expectations, no evidence of variation in links between achievement and physiological health across the socioeconomic spectrum emerged. These null associations for interactions were robust across a variety of specifications, including models considering subcomponents of socioeconomic status (family income, parental education, and parental occupational prestige) as well as analyses carefully attending to the potential for nonlinearities in links between socioeconomic resources and physiological health. The null associations for interactions with family socioeconomic resources were unanticipated, given prior evidence suggesting reversals in links between self-control and health among the most disadvantaged adolescents (e.g., Miller et al., 2015). Such null findings may suggest that the achievement measures in the current study failed to tap into students' true self-control and self-regulation skills, which prior work has hypothesized led to the dysregulation of stress response systems among the most disadvantaged youth (e.g., Miller et al., 2015). However, self-regulation has been consistently linked with school performance, with higher levels predicting better grades and standardized test scores (Mischel, Shoda, & Rodriguez, 1989; Tangney, Baumeister, & Boone, 2004). Such evidence suggests that even with the aforementioned limitations of the academic effort measure in the current study, measures of GPA and college

completion likely indirectly tapped into students' self-control, and thus likely provided more distal measures of potentially response-disrupting effortful self-control.

Finally, these null results could suggest that earlier findings may have been particular to the samples from which they were drawn, which were far from representative of youth in the United States. Rather, participants in prior studies were socioeconomically disadvantaged, African American youth whose physioglogical health indicators were assessed at ages 19 through 22 (Brody et al., 2013; Chen et al., 2014; Miller et al., 2015). Conversely, the current study considered the physiological health outcomes of a socioeconomically and racially diverse sample of youth after the transition to adulthood (age 29). Perhaps reversals in links across the socioeconomic spectrum are specific to particular racial/ethnic groups, such as African American youth with legacies of social exclusion, rather than shared broadly across young adults in the United States.

Divergent Patterns across Racial and Ethnic Groups

Turning to potential variation in associations between achievement and physiological health across racial/ethnic groups, it was also hypothesized that links would vary across racial/ethnic groups, with achievement emerging as less beneficial for students belonging to minority groups in the United States. Once again, it was hypothesized that such variation would emerge as a function of variations in the extent of structural barriers that adolescents experience while striving for academic success, with achievement presaging less optimal physiological health among members of racial/ethnic minority groups as a function of striving for academic success in the context of racial/ethnic discrimination and marginalization.

Unlike the null interaction results that emerged when considering variations across the socioeconomic spectrum, interaction results suggested divergent patterns in links across racial/ethnic groups. Among non-Hispanic Asian adolescents, for example, select negative associations between achievement and later inflammation were stronger than those demonstrated by their White peers. These results suggest that health "payoffs" of educational success may actually be stronger for Asian American adolescents, which may be attributable to general patterns of social norms related to educational achievement within Asian American households. For example, a wealth of research suggests that Asian American parents have higher educational attainment expectations for their children than their peers in other racial/ethnic groups, even when accounting for socioeconomic status (see Yamamoto & Holloway, 2010 for review), and that similarly higher levels of educational attainment expectations are shared by Asian American adolescents themselves (Kao & Tienda, 1998). These higher expectations also translate into higher rates of attainment; while post-secondary education completion has risen markedly across all groups in recent years, leading to a new norm of "college for all" (Goyette, 2008, p. 462), rates are still highest among Asian American students (Ogunwole, Drewery, & Rios-Vargas, 2012).

These social norms may translate into more social—and health—costs for those who fail to attain high educational success, and also may translate into more supportive environments and resources to reach such success. For example, recent research suggests that Asian Americans, particularly East Asian American students, are more likely than their peers to have access to *shadow education* opportunities, such as private tutoring (Byun & Park, 2012). Such resources, which were not accounted for in the current

analyses, may act to assuage some of the stresses associated with striving for academic achievement, thus contributing to greater health payoffs for Asian American students when compared to their White peers. This is not to argue that Asian American students do not face academic challenges (Chang & Sue, 2003; Qin, 2008) or potential adverse treatment experienced by their peers in other racial/ethnic minority groups (e.g., Young & Takeuchi, 1998), but rather to suggest that there may be additional family, cultural, or social mechanisms contributing to the increased health returns evidenced among this group that the current study was unable to consider.

Contrary to interaction effects seen among Asian American youth, links between college completion and health were largely reversed among non-Hispanic Black youth compared to their White peers. Specifically, college completion, a key component of upward social mobility, predicted elevated BMI (which is associated with more rapid epigenetic aging [Horvath et al., 2014]), Epstein-Barr virus antibodies (which have been associated with certain types of cancers [Ji et al., 2007]), C-reactive protein levels (which have been linked with a range of problematic health outcomes including type 2 diabetes and stroke [Kuo, Yen, Chang, Kuo, Chen, & Sorond, 2005; Pradhan et al., 2001]), and allostatic load (which is linked with increased mortality [Goldman, Turra, Glei, Seplaki, Lin & Weinstein; Juster, McEwen, & Lupien, 2010]). These results directly contradict a "one size fits all" model of upward mobility, with college completion—the strongest predictor of decreased inflammation in the current research's full sample—predicting *elevated* risk among Black youth across a variety of important health outcomes.

Interestingly, Latino adolescents from a variety of ethnic backgrounds also showed slight evidence of similar health "costs" of academic success compared to their

non-Hispanic White peers in the main models of interest. Heightened GPA at age 15 was associated with elevated Epstein-Barr virus antibodies at age 29—suggesting heightened risk of cancer later in life among students who reported better grades in high school. While this pattern was weak, supplemental analyses that considered Mexican-origin Latino adolescents (see Tables B.31 through B.33) suggested that there might have been variation in links between achievement and health *within* the panethnic Latino group. Specifically, results suggested that a stronger pattern of health costs was driven by Mexican American youth in the Latino group, as interaction results were strengthened to suggest that college completion predicted elevated BMI, C-reactive protein levels, and allostatic load indices among Mexican American youth. These results nearly parallel those seen among the non-Hispanic Black group, suggesting that both Mexican American and Black adolescents in the current sample experienced reversed associations between achievement and health compared to their White peers.

If striving for achievement amidst social barriers to success leads to compromised physiological health, as authors of recent work suggesting health costs associated with academic competence have argued (e.g., Brody et al., 2013), then the similar patterns evinced by Mexican American and Black youth in the current study may be attributable to these groups' similar historical experiences of disenfranchisement and subordination in the United States (e.g., Lopez & Stanton-Salazar, 2001). Mexican Americans, much like African Americans, have faced a long history of stigmatization, economic exploitation, and exclusion in the United States (Gutiérrez, 1995). Further, these groups may be particularly similar with regard to relationships between stress processes and health specifically: recent work suggests that both Black and U.S. born Latino adults experience

similar levels and clustering of psychosocial stressors (Sternthal, Slopen, & Williams, 2011), possibly due to similar experiences of residential segregation and disadvantage (Williams, Mohammed, Leavell, & Collins, 2010). Such concentrated exposure to both social and environmental toxins may engender the elevated stress responses that, particularly when coupled with the stresses of academic success, contribute to and exasperate health inequities (Gee, Ro, Shariff-Marco, & Chae, 2009; Thompson, 2016).

In addition to these broad social and historical factors, a variety of mechanisms within proximal contexts may also contribute to the patterns of health costs evinced by both non-Hispanic Black and Mexican American young adults in the current study. Research suggests that neighborhood contexts, for example, not only play a central role in youth development (see Leventhal, Dupéré, & Shuey, 2015 for review), but that they also have the potential to vary drastically across racial and ethnic groups (Roux et al., 2001; U.S. Census Bureau, 2004). Specifically, Black and Latino adolescents in the United States are more likely to live in disadvantaged neighborhoods, which have been linked with lower educational attainment as well as, more recently, a wider variety of models of educational norms and models (e.g., Garner & Raudenbush, 1991; Harding, 2003; Harding, 2011). Thus, the young adults who demonstrated health costs of positive academic outcomes in this study may have interacted with a more heterogeneous array of educational norms than their peers in more advantaged neighborhoods, for whom educational attainment and success were modeled more consistently in their neighborhood contexts. This wider variety of educational models, which were not taken into account in the current study, may have made processes of educational attainment more stressful for youth from these racial/ethnic backgrounds, given that this variety of

norms and models leads to less concentrated information about and modeling of educational success (Harding, 2011).

Differential experiences within educational environments beyond the high school context may also contribute to the health costs associated with academic outcomes among non-Hispanic Black and Mexican American young adults in the current sample. Climates of prejudice and discrimination on college campuses, for example, expose racial/ethnic minority students to heightened psychological and sociocultural stressors (Muñoz, 1987; Smedley, Myers, & Harrell, 1993; Suarez-Balcazar, Orellana-Damacela, Portillo, Rowan, & Andrews-Guillen, 2003). These heightened stressors, which have been linked with disengagement and lessened persistence to complete college for students from these racial/ethnic groups (Nora & Cabrera, 1996), may have contributed to the health costs evidenced by non-Hispanic Black and Mexican American young adults in the current study. Due to data limitations, the current study was unable to consider discriminatory contexts at the college level, leaving open the possibility that the college campus climate—particularly with regard to discriminatory contexts—may have added additional stress exposures for non-Hispanic Black and Mexican American students in particular.

An additional, alternative explanation for these patterns may be related to the differential economic returns of educational attainment across racial/ethnic groups in the United States. Estimates indicate that non-Hispanic White adults earn more than their Black and Latino peers at nearly every level of educational attainment (Day & Newburger, 2002), suggesting that White youth in the current study simply may have been more able to invest in health-promoting resources than their similarly educated Black and Mexican American peers. However, if divergent links were driven by such

differences in economic returns, then one would expect the *strength* of associations to vary across these groups rather than the *direction.* Yet the interaction results indicate that physiological health worsened as a function of completing college—and presumably obtaining increased earnings compared to their less-educated peers—among Black and Mexican American youth, in line with recent suggestions that the posited, positive relationship between SES and physical health is not generalizable beyond White males (Pearson, 2008).

Taken together, the results of these interaction analyses support and extend recent work suggesting that striving for academic competence in the face of historical and structural barriers to success, such as those experienced by Black and Latino adolescents in the United States, may engender dysregulation of the stress-response system (Brody et al., 2013; Chen et al., 2014; Miller et al., 2015). However, these results also suggest the importance of considering variation in links both across and within racial/ethnic groups, as Asian American adolescents demonstrated divergent patterns from their racial/ethnic minority peers, and potential evidence of heterogeneity within the Latino group also emerged.

The Limited Role of School Contexts in Links

The final aim of this dissertation research sought to consider the school context's potential role in augmenting links among achievement, individual characteristics, and physiological health. Given research suggesting heightened levels of stress among low-SES adolescents in high-SES schools (Crosnoe, 2009), it was expected that socioeconomic mismatches at the school level would intensify links between heightened achievement and inflammation among low-SES youth. Results did not support this

hypothesis. Rather, results suggested some health *costs* of elevated GPA when low socioeconomic resources at the family and school level were compounded. Although prior research has found that low-income students progress less far math and science coursework and report greater levels of social isolation when they attend higher-income schools (Crosnoe, 2009), the current results suggest that such socioeconomic mismatches between family and school SES may have a short-term effect on adolescent outcomes, but that this effect may not extend to physiological indicators of stress in later adulthood. Alternatively, these results may also suggest that cumulative disadvantage—both at the family and at the school level—may carry longer-term risks for the health costs associated with academic achievement, as opposed to stresses related to social comparisons.

Drawing on evidence suggesting the deleterious effects of school-wide prejudice, particularly for racial and ethnic minority students (Bennet et al., 2015), it was also expected that heightened levels of school-wide prejudice and unfair treatment would exacerbate the health risks associated with heightened achievement among racial/ethnic minority students. Once again, however, results did not support this hypothesis. Given that self-reports of discrimination have been linked with a variety of stress-related health and mental health outcomes (e.g., Krieger & Sidney, 1996; Noh, Kaspar, & Wickrama, 2007) as well as with academic performance (e.g., Neblett, Philip, Cogburn, & Sellers, 2006) among myriad racial/ethnic minority groups in the United States, these results were unexpected. The lack of interactive effects at the school level may be partially due to the measures utilized in the current study. Recognizing the complexity inherent to measuring experiences and perceptions of discrimination and prejudice, other work considering

links between discriminatory stressors and stress-related health outcomes relies on multi-item, well-validated measures such as the Everyday Discrimination Scale (e.g., Gee et al., 2008) or Kessler, Mickelson, and Williams' (1990) measure of chronic daily discrimination (e.g., Gee, Spencer, Chen, & Takeuchi, 2007). However, the data available in the current analyses allowed only consideration of two single items, in which students rated their agreement with the statements: *"the students at this school are prejudiced"* and *"the teachers at this school treat students fairly."* While these items tap into students' perceptions of general prejudice and unfair treatment, they do not specify the students' beliefs regarding the root of this perceived prejudice and unfair treatment. Students may have interpreted the questions as referring to perceptions of treatment attributed to a variety of characteristics, such as socioeconomic status, race/ethnicity, sexual minority status, obesity, or ability. As such, the school-level measures considered in the current analyses may emerge as more relevant across other indicators of social vulnerability beyond racial/ethnic group membership.

Another important potential explanation for the lack of interactive effects between achievement and school-wide levels of perceived prejudice and unfair treatment lies in the complex relationships among perceptions of racially motivated prejudice, racial identity, and academic outcomes. Research suggests that among African American adolescents, strong racial identity attitudes can buffer potential negative effects of discriminatory experiences on academic performance (Wong, Eccles, & Sameroff, 2003). Such findings suggest that highly prejudiced environments may not carry additional, stress response-triggering risks for high achieving, racial/ethnic minority adolescents broadly. Instead, such environments may be particularly harmful for students with

weaker racial identity attitudes. The current study did not consider the potentially promotive role of racial identity in links between achievement and perceptions of prejudice, and thus cannot discern whether school-level perceptions of prejudice may have augmented links among racial/ethnic minority students across varying levels of racial identity.

To that end, the lack of significant interactive effects at the school level—both with regard to socioeconomic and discriminatory characteristics—highlights the need for future research to consider other processes and contexts that may link achievement with differential later health. In addition to the potential role of racial identity in these links, these findings still leave open the possibility that characteristics of other contexts, such as the neighborhood, may contribute to divergent links. To the extent that the extant literature in this area has considered contextual effects on links between achievement and health, Chen and colleagues found that higher poverty neighborhoods interacted significantly with college attendance to predict worse physiological health among disadvantaged African American adolescents (2015). Indeed, a wealth of research highlights the notable developmental threats and stressors present in impoverished neighborhoods, including poor housing quality, high levels of crime and pollution, and the potential scarcity of adults to model educational success and provide links to job opportunities (Burton, Lichter, Baker, & Eason, 2013; Coley, Leventhal, Lynch, & Kull, 2013). Such community stressors are important mechanisms to consider in achievement-to-health pathways. Finally, the duration of time between the data collection of school contexts (at wave 1) and later health (at wave 4), during which time youth may encounter many inhibitive and promotive social contexts, may simply be too long to measure the

effects of marginalization and prejudice at school. Perhaps other educational contexts during the intervening years, such as the college campus climate, would augment these associations with young adult health.

Contributions and Implications

This research aimed to extend emerging work suggesting that high functioning adolescents may demonstrate compromised physical health as a function of striving for success in contexts of disadvantage (e.g., Brody et al., 2013). This project serves as an extension of this work in a number of important ways. First, this research utilizes a sample drawn from a nationally representative study and thus considers adolescents from diverse socioeconomic and racial/ethnic backgrounds. The consideration of a more representative and diverse sample enabled the current research to better disentangle the complex contributions of both socioeconomic disadvantage and racial/ethnic marginalization to potential health costs of striving for academic success. In considering variations both across the socioeconomic spectrum *and* across racial/ethnic groups, results provide additional evidence that racial/ethnic marginality—particularly among groups with marked histories of social exclusion—rather than socioeconomic disadvantage may engender dysregulation of the stress-response system. By replicating and extending prior work in this arena, these results provide additional empirical evidence to challenge theories of upward mobility as a "one size fits all" phenomenon. These findings instead suggest that proposed health benefits of academic and educational achievement should be reconsidered, with more explicit consideration of the individual experiences that may shape these links. Until the field has a better grasp of the role that striving for educational success plays in persistent health inequities, these results bear

witness to the limitations of upward mobility as an equalizing process (Braveman & Gruskin, 2009).

Additionally, this dissertation research explicitly considered how opportunities for marginalization in the school context might exacerbate or attenuate links between achievement and health. A variety of developmental researchers have argued for the importance of considering the influence of contextual, inhibiting and promotive processes for minority youth (e.g., García Coll et al., 1996; Spencer, Dupree, & Hartmann, 1997), and the field of public health increasingly advocates for a person-in-context framework to explore the social determinants of health inequities (Bleich et al., 2012). By drawing attention to the potential augmenting role of contextual effects on disparate associations between achievement and health, despite their null effects, the current research responds to such increasing calls to better understand environmental-level factors—rather than focusing solely on individual factors—associated with health inequities.

Given these contributions to the literature, the results of this dissertation suggest important next steps in the research agenda, as outlined below, and also bear policy implications. From an applied perspective, these findings suggest careful consideration of programmatic efforts aimed at promoting achievement and self-control without considering or addressing the potential trade-offs of demonstrating such outcomes across diverse contexts. For example, as researchers have improved our collective understanding of the role of self-control skills in educational outcomes as well as externalizing behaviors (e.g., Moffitt et al., 2011), there have been increasing calls for character-building interventions aimed at low-SES youth in an effort to promote self-control skills and, in turn, reduce educational and externalizing disparities (e.g., Heckman, 2008;

Shonkoff, 2011). The results of the present study, coupled with the results of prior work in this arena, suggest that policymakers should expand such interventions to include considerations of youth health and stress outcomes, as well.

Limitations and Directions for Future Research

When interpreting the results from the present study, it is imperative to acknowledge key limitations of this work. First, it is important to highlight that the correlational, descriptive nature of these data preclude drawing any true causal inferences. Although the prospective, multilevel modeling strategy incorporates rich covariates that help to assuage concerns over omitted variable bias, even the most extensive set of controls leaves the potential for omitted variable bias (Duncan et al., 2004). Although it is difficult to identify causal inferences in such complex social science research, future work with multiple waves of achievement as well as physiological health measures would further illuminate mechanisms that differentially link achievement and health outcomes.

Additionally, although this research certainly extends recent work uncovering links between high achievement and later compromised physical health among low-income, African American adolescents in the rural south (e.g., Miller et al., 2015) by considering adolescents from diverse socioeconomic and racial/ethnic backgrounds, it is still just one step towards better understanding the educational and health experiences of youth of color (García Coll et al, 1996). It is imperative that future work considers the unique experiences of and associations between achievement and physiological functioning within panethnic groups, paying particular attention to the historical and contextual factors that vary across groups and that may engender heightened stress

experiences among individuals. This is particularly important given that not only socioeconomic status but also cultural expectations of educational attainment, reasons for migration to the United States, reception and models of incorporation into U.S. society, and levels of trust in the educational system in the United States may vary within these panethnic groups (Bohon, Johnson, & Gorman, 2006; Johnson, Farrell, & Guinn, 1997). Unfortunately, the data source utilized in the current study did not allow for such thorough considerations due to small cell sizes for select groups.

However, the results of the current supplementary analyses considering such within-group variation, delineating Mexican American adolescents from the broader panethnic Latino group, provide support for the need for future research to attend to diversity within panethnic groups in these links. For example, both educational expectations and aspirations have been evidenced to vary across the three largest Latino groups in the United States, with Mexican American and Puerto Rican adolescents demonstrating lower levels than their non-Hispanic White peers, but Cuban American adolescents endorsing *higher* expectations and aspirations than their White peers (Bohon, Johnson, & Gorman, 2006). Cuban Americans have also been argued to experience fewer academic adjustment problems than their Mexican-origin Latino peers (Portes, 1999). Notable diversity in academic achievement also exists among Asian American groups, with Chinese American adolescents reporting higher grade point averages than their Filipino American peers (Eng, Kanitkar, Cleveland, Herbert, Fischer, & Wiersma, 2008). Further, a number of scholars have noted that Filipino Americans are racialized in the United States more similarly to their Black and Latino peers than they are to other Asian Americans, suggesting that Filipino Americans may evince divergent patterns from their

Asian American peers (Ocampo, 2010; Nadal, 2008; Teranishi, 2002; Okamura, 2008). Given such notable heterogeneity among Latino and Asian groups in the literature, as well as disparate histories of privilege and immigration to the United States (Leong, Inman, Ebreo, Yang, Kinoshita, & Fu, 2006; Portes & Stepick, 1993), it is imperative for future work to consider links between achievement and health among Latino and Asian subgroups. Should variation in links emerge, such research should also consider the various mechanisms that may contribute to them.

Additionally, although the current study did not identify any school interactive effects, potentially due to a variety of methodological and conceptual factors, an important possibility remains that other contexts, such as the neighborhood and the family, may contribute to divergent links between achievement and health. Thus, future research should build upon Chen and colleagues' (2014) consideration of neighborhood poverty as a contextual risk factor by considering neighborhood factors that may attenuate or exacerbate health costs of striving for academic success. Similarly, future work could further our understanding of these patterns by more explicitly considering the role of the family context. Research has long suggested that parenting styles may buffer the effects of stress and risk in early life, suggesting that parenting traits, such as responsiveness, are potential mechanisms in links between achievement-related stressors and stress-related health across the life-course (Bradley, Whiteside, Mundform, Casey, Kelleher, & Pope, 1994; Gramezy, 1985). Finally, although this work considered the potential for variations across *both* the socioeconomic spectrum and across racial/ethnic groups independently, it did not consider variations across the socioeconomic spectrum within racial/ethnic groups. Future research, in an effort to better understand the potential

cumulative nature of stress exposures on physiological functioning and to reduce potential misspecifications of complex health risks (Williams, 1999), should do so.

Conclusion

The results of this dissertation extend the literature on academic achievement and associated stress responses during adolescence and the transition to young adulthood by revealing divergent links across racial/ethnic groups, but not across the socioeconomic spectrum. These findings, if replicated with future research that addresses the aforementioned limitations with newer or more comprehensive data, suggest the importance of considering variations in achievement-to-health pathways as well as the role of contextual disadvantage among high achieving adolescents. Further, while caution is warranted when drawing implications from correlational designs such as this one, such results can inform and improve intervention efforts aimed at promoting the educational and, in turn, health outcomes of our nation's youth.

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Appendix A. Supplementary Results

The following tables present results from additional models that supplement the previously discussed results. These models consider (1) not only grade point average and college completion as indicators of academic achievement, but also academic effort (Tables A.1 through A.5), and (2) measures of school-wide perceptions of teacher unfairness as an additional measure of opportunities for marginalization in the school context (Table A.6). As discussed in the Results section, these measures emerged as less predictive across physiological health outcomes—both in main effects and interactive models—compared to their counterparts utilized in the main analyses.

Additionally, Figures A.1 through A.4 present two-way interaction results from models considering the augmenting role of school-wide perceptions of peer prejudice. Although not a primary interest in the present analyses, these models suggest that links between school-wide perceptions of peer prejudice and later physiological health varied across groups, such that higher levels of perceived prejudice by students within schools were associated more strongly with higher levels of inflammation in later adulthood for non-Hispanic Black and Latino students than for their non-Hispanic White peers. These results held in models considering the lower-order interactions but excluding the three-way interactions, as well.

Table A.1. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analyses Predicting Physiological Health Outcomes including Academic Effort as an Indicator of Achievement

	Diastolic Blood Pressure	Systolic Blood Pressure	Body Mass Index	Epstein-Barr Virus Antibodies	C-Reactive Protein Levels	Allostatic Load
	n =14,296	*n* =14,296	*n* =14,564	*n* =13,132	*n* =13,132	*n* =12,672
	Coef (SE)	Coef (SE)	Coef (SE)	Coef (SE)	Coef (SE)	Coef (SE)
Acadamic Achievement						
GPA	-0.15 (0.21)	-0.27 (0.31)	-0.40 (0.15)**	-0.01 (0.01)	-0.04 (0.03)	-0.03 (0.03)
Academic effort	0.07 (0.19)	0.01 (0.28)	0.18 (0.19)	0.00 (0.01)	0.01 (0.03)	0.00 (0.03)
College completion	-0.85 (0.32)**	-0.72 (0.35)*	-1.38 (0.20)**	-0.06 (0.02)**	-0.20 (0.04)**	-0.16 (0.04)**
Family SES	-0.14 (0.22)	-0.20 (0.34)	-0.41 (0.13)**	-0.03 (0.02)+	-0.07 (0.03)*	-0.08 (0.03)**
Race/Ethnicity						
Asian	1.23 (0.89)	0.46 (1.41)	-1.16 (0.53)*	-0.03 (0.05)	-0.33 (0.09)**	-0.14 (0.09)
Black	0.44 (0.59)	1.11 (0.75)	0.74 (0.49)	0.15 (0.03)**	-0.01 (0.07)	0.13 (0.08)
Latino	-0.66 (0.52)	-0.45 (0.65)	0.31 (0.42)	0.07 (0.05)	0.12 (0.07)+	0.09 (0.07)
Multiracial & other	0.82 (0.49)+	0.79 (0.63)	0.75 (0.52)	0.04 (0.03)	0.02 (0.08)	0.16 (0.08)*
Individual & Family Covariates						
Age	0.04 (0.01)**	0.02 (0.01)*	0.01 (0.01)+	0.00 (0.00)*	0.00 (0.00)	0.00 (0.00)*
Male	4.25 (0.24)**	9.35 (0.32)**	-0.10 (0.23)	-0.17 (0.02)**	-0.50 (0.03)**	0.23 (0.05)**
Low Birthweight	0.39 (0.50)	0.07 (0.68)	-0.59 (0.41)	0.00 (0.04)	0.00 (0.07)	0.02 (0.07)
Poor prior health	1.22 (0.50)*	2.28 (0.61)**	2.70 (0.39)**	0.03 (0.04)	0.28 (0.09)**	0.25 (0.08)**
Pregnancy (at wave 4)	-- --	-- --	-- --	-0.08 (0.04)*	0.75 (0.06)**	-- --
Parent single	0.77 (0.68)	0.43 (0.90)	0.28 (0.52)	0.03 (0.04)	0.02 (0.08)	0.05 (0.09)
Parent divorced/separated	0.22 (0.35)	-0.15 (0.48)	-0.04 (0.28)	-0.02 (0.02)	-0.02 (0.04)	-0.02 (0.05)
School Covariates						
School avg GPA	0.69 (0.98)	1.46 (1.31)	0.62 (0.60)	0.04 (0.06)	0.00 (0.13)	0.16 (0.11)
School avg academic effort	-0.53 (2.23)	-0.38 (3.33)	-0.13 (1.42)	-0.15 (0.12)	-0.04 (0.27)	-0.37 (0.23)
School avg college completion	-0.90 (1.95)	-1.50 (2.76)	-1.85 (1.61)	-0.03 (0.12)	-0.07 (0.27)	-0.40 (0.15)**
School avg family SES	-0.56 (0.93)	-0.23 (1.35)	-0.24 (0.78)	-0.09 (0.06)	-0.10 (0.13)	-0.10 (0.12)
School percent Asian	-2.16 (2.39)	-3.85 (4.39)	-1.93 (1.92)	0.44 (0.18)*	-0.17 (0.39)	0.02 (0.27)
School percent Black	-0.30 (1.14)	0.61 (1.55)	1.76 (0.89)+	0.10 (0.07)	0.19 (0.15)	0.24 (0.14)+
School percent Latino	-2.47 (2.40)	0.20 (3.19)	4.64 (1.63)**	-0.25 (0.18)	0.33 (0.29)	0.22 (0.25)
Small school	0.00 (0.36)	-0.03 (0.5)	0.38 (0.24)	0.00 (0.02)	-0.01 (0.05)	0.01 (0.04)
Large school	-0.24 (0.39)	-0.39 (0.59)	-0.30 (0.23)	0.02 (0.02)	-0.07 (0.04)	-0.06 (0.04)
School has HS grades	0.68 (0.56)	0.75 (0.87)	0.76 (0.33)*	-0.01 (0.03)	0.10 (0.07)	0.08 (0.06)
Urban	-0.46 (0.36)	-1.07 (0.5)*	-0.45 (0.24)+	0.01 (0.02)	-0.01 (0.04)	-0.10 (0.04)**
Rural	-0.09 (0.44)	0.10 (0.56)	0.36 (0.33)	0.00 (0.02)	0.07 (0.06)	0.05 (0.05)
West	-0.23 (0.50)	-0.02 (0.82)	0.05 (0.31)	0.02 (0.03)	-0.05 (0.06)	-0.02 (0.05)
Midwest	-0.14 (0.34)	0.34 (0.48)	-0.07 (0.24)	0.04 (0.02)+	0.01 (0.04)	0.03 (0.04)
Northeast	-0.83 (0.39)	-0.64 (0.56)	-0.21 (0.27)	0.01 (0.03)	-0.01 (0.05)	0.00 (0.04)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01.

Table A.2. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analyses Considering Variations in Links between Achievement and Physiological Health Outcomes across the Socioeconomic Spectrum including Academic Effort as an Indicator of Achievement

	Diastolic Blood Pressure *n* =14,296 Coef (SE)	Systolic Blood Pressure *n* =14,296 Coef (SE)	Body Mass Index *n* =14,564 Coef (SE)	Epstein-Barr Virus Antibodies *n* =13,132 Coef (SE)	C-Reactive Protein Levels *n* =13,132 Coef (SE)	Allostatic Load *n* =12,672 Coef (SE)
Acadamic Achievement						
GPA	-0.16 (0.21)	-0.27 (0.31)	-0.41 (0.15)**	-0.01 (0.01)	-0.04 (0.03)	-0.03 (0.03)
Academic effort	0.08 (0.19)	0.01 (0.28)	0.19 (0.18)	0.00 (0.01)	0.01 (0.03)	0.00 (0.03)
College completion	-0.81 (0.33)*	-0.68 (0.36)+	-1.31 (0.21)**	-0.05 (0.02)**	-0.19 (0.04)**	-0.15 (0.04)**
Family SES	-0.13 (0.22)	-0.19 (0.34)	-0.41 (0.14)	-0.03 (0.02)+	-0.07 (0.03)*	-0.08 (0.03)*
Interactions						
GPA X Family SES	-0.11 (0.24)	-0.03 (0.35)	-0.09 (0.22)	-0.01 (0.02)	0.00 (0.04)	-0.02 (0.04)
Effort X Family SES	0.02 (0.30)	-0.12 (0.43)	-0.06 (0.23)	0.02 (0.02)	0.02 (0.04)	0.02 (0.04)
College X Family SES	-0.29 (0.43)	-0.36 (0.66)	-0.49 (0.40)	-0.03 (0.03)	-0.06 (0.06)	-0.05 (0.07)
Individual & Family Covariates						
Asian	1.22 (0.88)	0.46 (1.40)	-1.18 (0.54)*	-0.03 (0.05)	-0.33 (0.09)**	-0.14 (0.09)
Black	0.44 (0.59)	1.10 (0.75)	0.72 (0.49)	0.15 (0.03)**	-0.01 (0.07)	0.12 (0.08)
Latino	-0.63 (0.52)	-0.43 (0.64)	0.34 (0.42)	0.07 (0.05)	0.12 (0.07)+	0.09 (0.07)
Multiracial & other	0.81 (0.48)+	0.78 (0.62)	0.74 (0.52)	0.04 (0.03)	0.02 (0.08)	0.16 (0.08)*
Age	0.04 (0.01)**	0.02 (0.01)*	0.01 (0.01)+	0.00 (0.00)*	0.00 (0.00)	0.00 (0.00)*
Male	4.24 (0.24)**	9.34 (0.32)**	-0.10 (0.23)	-0.17 (0.02)**	-0.50 (0.03)**	0.23 (0.05)**
Low Birthweight	0.39 (0.50)	0.07 (0.68)	-0.59 (0.41)	0.00 (0.04)	0.00 (0.07)	0.02 (0.07)
Poor prior health	1.22 (0.50)*	2.28 (0.61)**	2.70 (0.39)**	0.03 (0.04)	0.28 (0.09)**	0.25 (0.08)**
Pregnancy (at wave 4)	-- --	-- --	-- --	-0.08 (0.04)*	0.75 (0.06)**	-- --
Parent single	0.78 (0.68)	0.44 (0.90)	0.29 (0.52)	0.03 (0.04)	0.02 (0.08)	0.05 (0.09)
Parent divorced/separated	0.22 (0.35)	-0.16 (0.48)	-0.05 (0.28)	-0.02 (0.02)	-0.02 (0.04)	-0.02 (0.05)
School Covariates						
School avg GPA	0.62 (0.99)	1.38 (1.32)	0.52 (0.60)	0.04 (0.06)	-0.02 (0.13)	0.16 (0.11)
School ave academic effort	-0.41 (2.24)	-0.24 (3.35)	0.07 (1.44)	-0.13 (0.12)	-0.02 (0.27)	-0.35 (0.24)
School avg college completion	-0.90 (1.96)	-1.49 (2.77)	-1.84 (1.60)	-0.03 (0.12)	-0.06 (0.27)	-0.25 (0.24)
School avg family SES	-0.47 (0.95)	-0.13 (1.36)	-0.09 (0.79)	-0.08 (0.06)	-0.09 (0.13)	-0.09 (0.12)
School percent Asian	-2.11 (2.38)	-3.78 (4.37)	1.69 (0.88)+	0.44 (0.18)*	-0.16 (0.39)	0.01 (0.27)
School percent Black	-0.34 (1.14)	0.55 (1.54)	4.67 (1.61)**	0.10 (0.07)	0.18 (0.15)	0.22 (0.14)
School percent Latino	-2.45 (2.39)	0.23 (3.18)	-1.85 (1.95)	-0.25 (0.18)	0.33 (0.29)	0.13 (0.26)
Small school	0.00 (0.36)	-0.03 (0.50)	0.38 (0.24)	0.00 (0.02)	-0.01 (0.05)	0.01 (0.04)
Large school	-0.25 (0.39)	-0.41 (0.59)	-0.32 (0.23)	0.02 (0.02)	-0.07 (0.04)	-0.06 (0.04)
School has HS grades	0.68 (0.57)	0.76 (0.88)	0.78 (0.33)*	-0.01 (0.03)	0.10 (0.07)	0.08 (0.06)
Urban	-0.46 (0.36)	-1.07 (0.50)*	-0.45 (0.24)+	0.01 (0.02)	-0.01 (0.04)	-0.09 (0.04)**
Rural	-0.08 (0.44)	0.11 (0.56)	0.37 (0.33)	0.00 (0.02)	0.07 (0.06)	0.05 (0.05)
West	-0.26 (0.50)	-0.06 (0.81)	0.00 (0.32)	0.02 (0.03)	-0.06 (0.06)	-0.02 (0.05)
Midwest	-0.14 (0.34)	0.34 (0.48)	-0.07 (0.24)	0.04 (0.02)+	0.01 (0.04)	0.03 (0.04)
Northeast	-0.83 (0.39)*	-0.65 (0.56)	-0.22 (0.27)	0.01 (0.03)	-0.01 (0.05)	-0.01 (0.04)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01.

Table A.3. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analyses Considering Variations in Links between Achievement and Physiological Health Outcomes across Racial/Ethnic Groups including Academic Effort as an Indicator of Achievement

	Diastolic Blood Pressure *n* =14,296 Coef (SE)	Systolic Blood Pressure *n* =14,296 Coef (SE)	Body Mass Index *n* =14,564 Coef (SE)	Epstein-Barr Virus Antibodies *n* =13,132 Coef (SE)	C-Reactive Protein Levels *n* =13,132 Coef (SE)	Allostatic Load *n* =12,672 Coef (SE)
Acadamic Achievement						
GPA	-0.10 (0.21)	-0.21 (0.29)	-0.39 (0.14)**	-0.01 (0.01)	-0.03 (0.03)	-0.03 (0.03)
Academic effort	0.08 (0.20)	0.01 (0.27)	0.18 (0.19)	0.00 (0.01)	0.00 (0.03)	-0.01 (0.03)
College completion	-0.82 (0.26)**	-0.74 (0.41)+	-1.25 (0.23)**	-0.05 (0.02)**	-0.18 (0.04)**	-0.13 (0.04)**
Race/Ethnicity						
Asian	1.41 (0.96)	0.62 (1.55)	-0.69 (0.53)	-0.02 (0.05)	-0.33 (0.10)**	-0.11 (0.09)
Black	0.45 (0.58)	1.01 (0.76)	0.92 (0.48)+	0.15 (0.03)**	0.01 (0.07)	0.16 (0.08)*
Latino	-0.58 (0.51)	-0.35 (0.66)	0.41 (0.46)	0.09 (0.05)+	0.14 (0.08)+	0.12 (0.07)
Multiracial & other	0.90 (0.53)+	0.94 (0.68)	0.82 (0.55)	0.04 (0.03)	0.03 (0.08)	0.17 (0.09)*
Interactions						
GPA X Asian	0.28 (0.91)	0.53 (1.29)	-1.09 (0.66)+	0.00 (0.07)	0.11 (0.12)	0.03 (0.10)
GPA X Black	0.22 (0.44)	0.21 (0.63)	0.06 (0.48)	-0.02 (0.04)	-0.02 (0.08)	0.01 (0.07)
GPA X Latino	0.97 (0.59)	1.44 (0.89)	0.29 (0.39)	0.10 (0.04)**	0.00 (0.08)	0.10 (0.07)
GPA X Multiracial/Other	-0.13 (0.75)	0.01 (1.09)	-0.30 (0.69)	0.03 (0.04)	0.02 (0.11)	-0.05 (0.12)
Effort X Asian	-0.78 (0.90)	-0.67 (1.51)	-0.63 (0.60)	0.01 (0.08)	-0.05 (0.10)	-0.14 (0.12)
Effort X Black	0.30 (0.56)	0.26 (0.74)	-0.05 (0.40)	-0.01 (0.03)	-0.03 (0.07)	-0.02 (0.06)
Effort X Latino	-0.52 (0.63)	-0.79 (1.08)	-0.27 (0.66)	-0.02 (0.04)	0.04 (0.10)	-0.09 (0.10)
Effort X Multiracial/Other	-0.10 (0.75)	-0.31 (1.23)	-0.01 (0.80)	0.06 (0.04)	-0.03 (0.12)	-0.02 (0.13)
College X Asian	-3.19 (1.94)+	-4.73 (2.24)*	-0.74 (0.68)	-0.06 (0.06)	-0.29 (0.19)	-0.30 (0.22)
College X Black	0.15 (0.67)	-0.75 (0.96)	1.66 (0.52)**	0.08 (0.05)+	0.22 (0.10)*	0.31 (0.09)**
College X Latino	-1.12 (0.81)	-1.75 (1.22)	0.09 (0.99)	0.02 (0.07)	0.19 (0.16)	0.05 (0.14)
College X Multiracial/Other	1.23 (1.31)	2.00 (2.49)	1.14 (1.04)	-0.03 (0.08)	0.11 (0.15)	0.16 (0.21)
Individual & Family						
Age	0.04 (0.01)**	0.02 (0.01)*	0.01 (0.01)+	0.00 (0.00)*	0.00 (0.00)	0.00 (0.00)*
Male	4.29 (0.22)**	9.41 (0.31)**	-0.07 (0.22)	-0.17 (0.02)**	-0.50 (0.03)**	0.24 (0.04)**
Low Birthweight	0.40 (0.50)	0.08 (0.68)	-0.60 (0.41)	0.00 (0.04)	0.00 (0.07)	0.02 (0.07)
Poor prior health	1.24 (0.49)*	2.33 (0.60)**	2.67 (0.41)**	0.03 (0.04)	0.28 (0.09)**	0.25 (0.08)**
Pregnancy (at wave 4)	-- --	-- --	-- --	-0.08 (0.04)*	0.75 (0.06)**	-- --
Family SES	-0.17 (0.22)	-0.22 (0.34)	-0.42 (0.13)**	-0.03 (0.02)	-0.07 (0.03)*	-0.08 (0.03)**
Parent single	0.78 (0.66)	0.41 (0.86)	0.37 (0.51)	0.04 (0.04)	0.03 (0.08)	0.06 (0.09)
Parent divorced/separated	0.19 (0.33)	-0.19 (0.46)	-0.06 (0.27)	-0.02 (0.02)	-0.02 (0.04)	-0.02 (0.04)
School Covariates						
School avg GPA	0.63 (0.97)	1.47 (1.29)	0.48 (0.60)	0.03 (0.06)	-0.03 (0.13)	0.14 (0.11)
School avg academic effort	-0.68 (2.18)	-0.61 (3.24)	-0.14 (1.41)	-0.14 (0.13)	-0.02 (0.27)	-0.35 (0.23)
School avg college completion	-1.87 (1.22)	-2.03 (1.67)	-2.17 (0.79)**	-0.15 (0.08)+	-0.19 (0.16)	-0.39 (0.15)**
School avg family SES	-0.54 (0.92)	-0.29 (1.33)	-0.09 (0.74)	-0.09 (0.07)	-0.09 (0.13)	-0.09 (0.12)
School percent Asian	-1.93 (2.25)	-3.65 (4.13)	-1.82 (1.87)	0.44 (0.19)*	-0.17 (0.39)	0.01 (0.27)
School percent Black	-0.22 (1.09)	0.67 (1.46)	1.74 (0.85)*	0.12 (0.07)+	0.20 (0.14)	0.22 (0.14)
School percent Latino	-2.18 (2.23)	0.22 (2.86)	4.60 (1.50)**	-0.16 (0.17)	0.39 (0.28)	0.17 (0.24)
Small school	-0.01 (0.35)	-0.01 (0.49)	0.33 (0.24)	0.00 (0.02)	-0.02 (0.05)	0.00 (0.04)
Large school	-0.26 (0.39)	-0.40 (0.58)	-0.33 (0.23)	0.01 (0.02)	-0.08 (0.05)+	-0.06 (0.04)
School has HS grades	0.62 (0.55)	0.69 (0.84)	0.73 (0.32)*	-0.01 (0.03)	0.10 (0.07)	0.07 (0.06)
Urban	-0.45 (0.35)	-1.04 (0.50)*	-0.45 (0.23)*	0.01 (0.02)	-0.01 (0.04)	-0.10 (0.04)**
Rural	-0.02 (0.44)	0.16 (0.55)	0.39 (0.32)	0.01 (0.02)	0.07 (0.06)	0.05 (0.05)
West	-0.29 (0.48)	-0.04 (0.79)	0.02 (0.3)	0.01 (0.03)	-0.06 (0.06)	-0.02 (0.05)
Midwest	-0.14 (0.34)	0.34 (0.48)	-0.07 (0.23)	0.04 (0.02)+	0.01 (0.04)	0.03 (0.04)
Northeast	-0.77 (0.38)*	-0.59 (0.55)	-0.17 (0.28)	0.02 (0.03)	-0.01 (0.05)	0.00 (0.04)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01.

Table A.4. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analyses Considering School-wide Socioeconomic Status as a Moderator of Links between Achievement, Family SES, and Physiological Health Outcomes including Academic Effort as an Indicator of Achievement

	Diastolic Blood Pressure *n* =14,296 Coef (SE)	Systolic Blood Pressure *n* =14,296 Coef (SE)	Body Mass Index *n* =14,564 Coef (SE)	Epstein-Barr Virus Antibodies *n* =13,132 Coef (SE)	C-Reactive Protein Levels *n* =13,132 Coef (SE)	Allostatic Load *n* =12,672 Coef (SE)
Acadamic Achievement						
GPA	-0.28 (0.22)	-0.41 (0.31)	-0.46 (0.15)**	-0.01 (0.01)	-0.04 (0.03)	-0.04 (0.03)
Academic effort	0.15 (0.20)	0.09 (0.29)	0.19 (0.18)	0.00 (0.01)	0.01 (0.03)	0.00 (0.03)
College completion	-0.79 (0.33)*	-0.62 (0.37)+	-1.27 (0.21)**	-0.05 (0.02)**	-0.20 (0.04)**	-0.15 (0.04)*
Family SES	-0.16 (0.24)	-0.21 (0.37)	-0.40 (0.15)**	-0.03 (0.02)+	-0.08 (0.03)*	-0.09 (0.03)*
School SES	-0.42 (1.03)	-0.15 (1.49)	-0.08 (0.83)	-0.08 (0.06)	-0.11 (0.15)	-0.15 (0.14)
Two Way Interactions						
GPA X Family SES	-0.03 (0.25)	0.02 (0.37)	-0.08 (0.24)	-0.01 (0.02)	0.00 (0.04)	-0.02 (0.04)
Effort X Family SES	-0.06 (0.32)	-0.18 (0.48)	-0.02 (0.25)	0.02 (0.02)	0.03 (0.04)	0.01 (0.04)
College X Family SES	-0.31 (0.51)	-0.40 (0.79)	-0.50 (0.47)	-0.03 (0.04)	-0.07 (0.07)	-0.08 (0.09)
Family SES X School SES	-0.54 (0.61)	-0.29 (0.81)	0.07 (0.45)	0.01 (0.04)	-0.03 (0.09)	0.04 (0.08)
GPA X School SES	-1.00 (0.72)	-1.01 (0.97)	-0.34 (0.54)	0.01 (0.05)	0.06 (0.09)	-0.05 (0.09)
Effort X School SES	0.96 (0.81)	0.94 (1.06)	-0.28 (0.50)	-0.06 (0.05)	-0.06 (0.09)	0.05 (0.10)
College X School SES	1.43 (1.07)	1.61 (1.54)	0.30 (0.85)	-0.13 (0.07)*	-0.08 (0.16)	0.03 (0.17)
Three Way Interactions						
GPA X Family SES X School SES	1.57 (0.58)**	1.92 (0.83)*	0.73 (0.41)+	0.02 (0.04)	0.05 (0.09)	0.12 (0.08)
Effort X Family SES X School SES	-0.83 (0.72)	-1.03 (1.00)	-0.07 (0.42)	0.03 (0.04)	-0.04 (0.08)	-0.06 (0.09)
College X Family SES X School SES	-0.61 (1.05)	-1.19 (1.49)	-0.65 (0.78)	0.04 (0.08)	0.10 (0.15)	0.03 (0.16)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01. All covariates listed in Tables A.1 through A.3 are included in these models.

Table A.5. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analyses Considering School-wide Perceptions of Peer Prejudice as a Moderator of Links between Achievement and Physiological Health Outcomes across Racial/Ethnic Groups including Academic Effort as an Indicator of Achievement

	Diastolic Blood Pressure *n* =14,296 Coef (SE)	Systolic Blood Pressure *n* =14,296 Coef (SE)	Body Mass Index *n* =14,564 Coef (SE)	Epstein-Barr Virus Antibodies *n* =13,132 Coef (SE)	C-Reactive Protein Levels *n* =13,132 Coef (SE)	Allostatic Load *n* =12,672 Coef (SE)
Acadamic Achievement						
GPA	-0.14 (0.22)	-0.25 (0.32)	-0.4 (0.15)**	-0.01 (0.01)	-0.04 (0.03)	-0.03 (0.03)
Academic effort	0.06 (0.22)	0.03 (0.28)	0.15 (0.20)	0.00 (0.01)	0.00 (0.03)	-0.01 (0.03)
College completion	-0.84 (0.27)**	-0.74 (0.40)+	-1.26 (0.23)**	-0.04 (0.02)*	-0.17 (0.04)**	-0.13 (0.04)**
Race/Ethnicity						
Asian	0.88 (0.79)	-0.09 (1.13)	-0.91 (0.51)+	-0.02 (0.05)	-0.37 (0.10)**	-0.15 (0.09)
Black	0.24 (0.57)	0.91 (0.75)	0.83 (0.48)+	0.16 (0.03)**	-0.01 (0.07)	0.14 (0.08)+
Latino	-0.77 (0.48)	-0.47 (0.64)	0.35 (0.47)	0.09 (0.05)+	0.13 (0.08)	0.11 (0.07)
Multiracial & other	0.77 (0.52)	0.79 (0.68)	0.73 (0.56)	0.04 (0.03)	0.01 (0.09)	0.15 (0.09)+
School Perceptions of Prejudice	1.48 (0.77)+	0.92 (1.26)	0.42 (0.54)	0.02 (0.04)	0.11 (0.1)	0.07 (0.09)
Two Way Interactions						
GPA X Asian	0.09 (1.00)	0.10 (1.42)	-1.22 (0.65)+	0.00 (0.07)	0.12 (0.13)	0.05 (0.11)
GPA X Black	0.31 (0.46)	0.28 (0.64)	0.01 (0.51)	-0.02 (0.04)	-0.02 (0.09)	0.01 (0.07)
GPA X Latino	1.01 (0.59)+	1.44 (0.89)	0.26 (0.39)	0.10 (0.04)**	0.00 (0.08)	0.10 (0.07)
GPA X Multiracial/Other	-0.05 (0.74)	0.01 (1.07)	-0.33 (0.70)	0.03 (0.05)	0.02 (0.11)	-0.04 (0.12)
College X Asian	-2.69 (1.92)	-3.77 (1.86)*	-0.51 (0.71)	-0.07 (0.07)	-0.37 (0.19)+	-0.39 (0.22)+
College X Black	-0.08 (0.71)	-1.11 (0.97)	1.51 (0.54)**	0.07 (0.05)	0.21 (0.10)*	0.27 (0.10)**
College X Latino	-1.10 (0.83)	-1.67 (1.23)	0.09 (0.99)	0.02 (0.08)	0.18 (0.16)	0.04 (0.14)
College X Multiracial/Other	1.27 (1.32)	1.96 (2.51)	1.12 (1.04)	-0.03 (0.08)	0.09 (0.15)	0.14 (0.21)
Effort X Asian	-0.45 (0.85)	-0.23 (1.39)	-0.42 (0.60)	0.00 (0.08)	-0.01 (0.10)	-0.12 (0.12)
Effort X Black	0.24 (0.56)	0.23 (0.76)	0.02 (0.44)	0.00 (0.04)	-0.01 (0.08)	-0.01 (0.06)
Effort X Latino	-0.44 (0.62)	-0.74 (1.09)	-0.17 (0.66)	-0.02 (0.04)	0.05 (0.10)	-0.08 (0.09)
Effort X Multiracial/Other	-0.02 (0.75)	-0.34 (1.24)	0.04 (0.81)	0.05 (0.04)	-0.02 (0.12)	-0.02 (0.13)
Prejudice X Asian	-7.99 (7.65)	-13.83 (13.29)	-3.67 (2.57)	-0.09 (0.26)	-0.39 (0.58)	-0.51 (0.57)
Prejudice X Black	2.15 (1.35)	3.30 (1.84)+	1.33 (0.93)	0.06 (0.08)	0.38 (0.19)*	0.33 (0.15)
Prejudice X Latino	3.82 (1.62)*	4.14 (2.39)+	2.40 (1.14)*	0.09 (0.14)	0.18 (0.21)	0.10 (0.26)
Prejudice X Multiracial/Other	1.99 (1.44)	-0.34 (2.28)	-0.59 (1.05)	-0.10 (0.1)	-0.04 (0.23)	-0.08 (0.24)
GPA X Prejudice	0.44 (0.64)	0.26 (0.88)	-0.03 (0.42)	0.00 (0.04)	0.01 (0.08)	0.02 (0.09)
Effort X Prejudice	0.16 (0.79)	0.55 (1.08)	0.28 (0.53)	-0.01 (0.04)	0.09 (0.09)	0.05 (0.09)
College X Prejudice	-0.47 (1.05)	0.37 (1.68)	-0.18 (0.55)	0.00 (0.06)	-0.16 (0.13)	-0.18 (0.12)
Three Way Interactions						
GPA X Asian X Prejudice	-0.71 (5.21)	-1.64 (8.02)	0.21 (2.57)	0.10 (0.35)	0.14 (0.65)	0.49 (0.74)
GPA X Black X Prejudice	-0.43 (1.48)	-0.37 (2.09)	-0.54 (1.37)	0.01 (0.11)	-0.17 (0.24)	-0.22 (0.21)
GPA X Latino X Prejudice	1.64 (2.60)	1.43 (3.57)	1.33 (2.09)	-0.07 (0.19)	0.16 (0.32)	0.11 (0.37)
GPA X Multi/Other X Prejudice	-0.21 (2.45)	0.45 (3.58)	0.42 (1.56)	0.02 (0.12)	0.13 (0.30)	0.00 (0.32)
College X Asian X Prejudice	9.19 (11.74)	18.42 (21.14)	4.56 (4.30)	0.01 (0.45)	-0.89 (0.82)	-1.04 (0.99)
College X Black X Prejudice	-2.38 (2.32)	-3.77 (3.32)	-1.38 (1.41)	0.01 (0.14)	0.01 (0.24)	-0.12 (0.28)
College X Latino X Prejudice	-3.02 (3.55)	1.00 (4.65)	-1.23 (2.49)	0.33 (0.34)	0.17 (0.61)	0.25 (0.55)
College X Multi/Other X Prejudice	-1.83 (2.88)	-0.33 (4.81)	0.55 (2.54)	0.30 (0.22)	-0.09 (0.48)	0.16 (0.49)
Effort X Asian X Prejudice	5.51 (6.38)	8.97 (10.28)	1.76 (3.53)	0.01 (0.37)	0.78 (0.67)	0.37 (0.65)
Effort X Black X Prejudice	-1.97 (1.90)	-1.24 (2.47)	-0.97 (1.21)	0.09 (0.10)	-0.09 (0.20)	-0.12 (0.17)
Effort X Latino X Prejudice	-1.72 (2.65)	1.61 (3.84)	-0.16 (1.84)	0.00 (0.22)	-0.02 (0.35)	0.04 (0.37)
Effort X Multi/Other X Prejudice	1.69 (2.09)	1.43 (2.63)	-0.90 (1.52)	-0.11 (0.15)	-0.15 (0.26)	-0.02 (0.26)

Note: Coef= Coefficient; SE= Standard Error; +p<.10, *p<.05, **p<.01. All covariates listed in Appendix Tables A.1 through A.3 are included in these models.

Table A.6. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analyses Considering School-wide Perceptions of Teacher Unfair Treatment as a Moderator of Links between Achievement and Physiological Health Outcomes across Racial/Ethnic Groups

	Diastolic Blood Pressure *n* =14,296 Coef (SE)	Systolic Blood Pressure *n* =14,296 Coef (SE)	Body Mass Index *n* =14,564 Coef (SE)	Epstein-Barr Virus Antibodies *n* =13,132 Coef (SE)	C-Reactive Protein Levels *n* =13,132 Coef (SE)	Allostatic Load *n* =12,672 Coef (SE)
Acadamic Achievement						
GPA	-0.11 (0.20)	-0.20 (0.30)	-0.35 (0.15)*	-0.01 (0.01)	-0.04 (0.03)	-0.03 (0.03)
College completion	-0.80 (0.28)**	-0.81 (0.42)+	-1.30 (0.24)**	-0.05 (0.02)**	-0.19 (0.04)**	-0.14 (0.04)**
Race/Ethnicity						
Asian	1.35 (0.89)	0.62 (1.38)	-0.70 (0.53)	-0.02 (0.06)	-0.32 (0.10)**	0.10 (0.08)
Black	0.31 (0.61)	0.63 (0.78)	0.72 (0.53)	0.16 (0.03)**	-0.07 (0.07)	0.11 (0.07)
Latino	-0.57 (0.51)	-0.29 (0.66)	0.43 (0.45)	0.07 (0.05)	0.13 (0.08)+	-0.09 (0.09)
Multiracial & other	0.84 (0.53)	0.95 (0.70)	0.87 (0.57)	0.03 (0.03)	0.03 (0.09)	0.16 (0.09)+
School Perceptions of Unfair Treatment	-1.48 (0.98)	-1.89 (1.33)	-0.09 (0.77)	-0.11 (0.07)	-0.24 (0.15)	0.10 (0.09)
Two Way Interactions						
GPA X Asian	0.01 (0.84)	0.25 (1.26)	-1.21 (0.62)+	0.00 (0.07)	0.11 (0.11)	-0.01 (0.09)
GPA X Black	0.28 (0.48)	0.38 (0.70)	0.13 (0.48)	-0.01 (0.04)	-0.02 (0.09)	0.02 (0.08)
GPA X Latino	0.78 (0.59)	1.25 (0.92)	0.22 (0.44)	0.10 (0.04)	0.00 (0.08)	0.08 (0.07)
GPA X Multiracial/Other	-0.25 (0.85)	-0.20 (1.26)	-0.35 (0.78)	0.05 (0.05)	0.01 (0.12)	-0.06 (0.13)
College X Asian	-2.84 (1.94)	-4.15 (2.09)*	-0.65 (0.68)	-0.07 (0.06)	-0.28 (0.18)	-0.26 (0.22)
College X Black	0.24 (0.80)	-1.02 (1.07)	1.51 (0.59)*	0.09 (0.05)	0.17 (0.11)	0.27 (0.11)*
College X Latino	-1.26 (0.86)	-2.16 (1.25)	-0.09 (1.04)	-0.02 (0.07)	0.19 (0.17)	0.01 (0.15)
College X Multiracial/Other	1.46 (1.33)	2.20 (2.56)	1.10 (1.08)	-0.03 (0.08)	0.12 (0.16)	0.18 (0.22)
Unfair Treatment X Asian	0.07 (9.46)	2.10 (13.82)	-0.34 (4.46)	-0.13 (0.40)	0.74 (0.82)	1.09 (0.90)
Unfair Treatment X Black	-2.44 (2.27)	-5.44 (2.77)	-3.25 (2.15)	0.04 (0.15)	-1.11 (0.31)**	-0.84 (0.29)**
Unfair Treatment X Latino	1.01 (3.28)	2.66 (4.21)	0.07 (2.63)	-0.40 (0.24)	-0.20 (0.40)	0.00 (0.41)
Unfair Treatment X Multiracial/Other	-1.67 (2.69)	-0.61 (3.40)	-0.24 (1.98)	-0.28 (0.16)	-0.29 (0.39)	-0.54 (0.38)
GPA X Unfair Treatment	-0.78 (1.07)	-0.64 (1.55)	-0.11 (0.91)	0.05 (0.08)	-0.13 (0.17)	-0.07 (0.16)
College X Unfair Treatment	1.03 (1.73)	0.41 (2.42)	-0.85 (1.21)	-0.14 (0.11)	-0.07 (0.19)	-0.12 (0.21)
Three Way Interactions						
GPA X Asian X Unfair Treatment	-6.00 (9.80)	-9.08 (14.06)	0.03 (4.69)	0.25 (0.54)	0.28 (1.14)	0.02 (0.44)
GPA X Black X Unfair Treatment	-0.10 (3.07)	0.87 (4.12)	0.70 (2.42)	0.07 (0.21)	-0.03 (0.44)	-0.05 (0.59)
GPA X Latino X Unfair Treatment	-1.50 (4.75)	-0.29 (5.67)	-0.30 (3.17)	0.01 (0.30)	-0.13 (0.55)	-0.43 (1.05)
GPA X Multi/Other X Unfair Treatment	-2.26 (3.98)	-2.86 (5.35)	-0.40 (2.87)	0.06 (0.24)	-0.13 (0.60)	-0.35 (0.55)
College X Asian X Unfair Treatment	19.08 (17.51)	23.10 (23.32)	3.45 (7.21)	-0.47 (0.64)	0.95 (1.39)	-0.59 (0.57)
College X Black X Unfair Treatment	2.23 (4.24)	-2.83 (6.08)	-2.42 (3.53)	0.08 (0.30)	-0.84 (0.52)	-0.85 (1.02)
College X Latino X Unfair Treatment	-1.78 (6.75)	-7.58 (8.40)	-4.14 (5.78)	-0.92 (0.50)	-0.26 (1.06)	2.10 (1.86)
College X Multi/Other X Unfair Treatmer	6.24 (5.79)	4.14 (7.74)	-3.51 (3.97)	-0.42 (0.41)	-0.32 (0.91)	-0.45 (0.81)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01. All covariates listed in main effects tables throughout dissertation are also included in these models.

Figure A.1. Links between School-wide Perceptions of Peer Prejudice and Diastolic Blood Pressure across Racial/Ethnic Groups

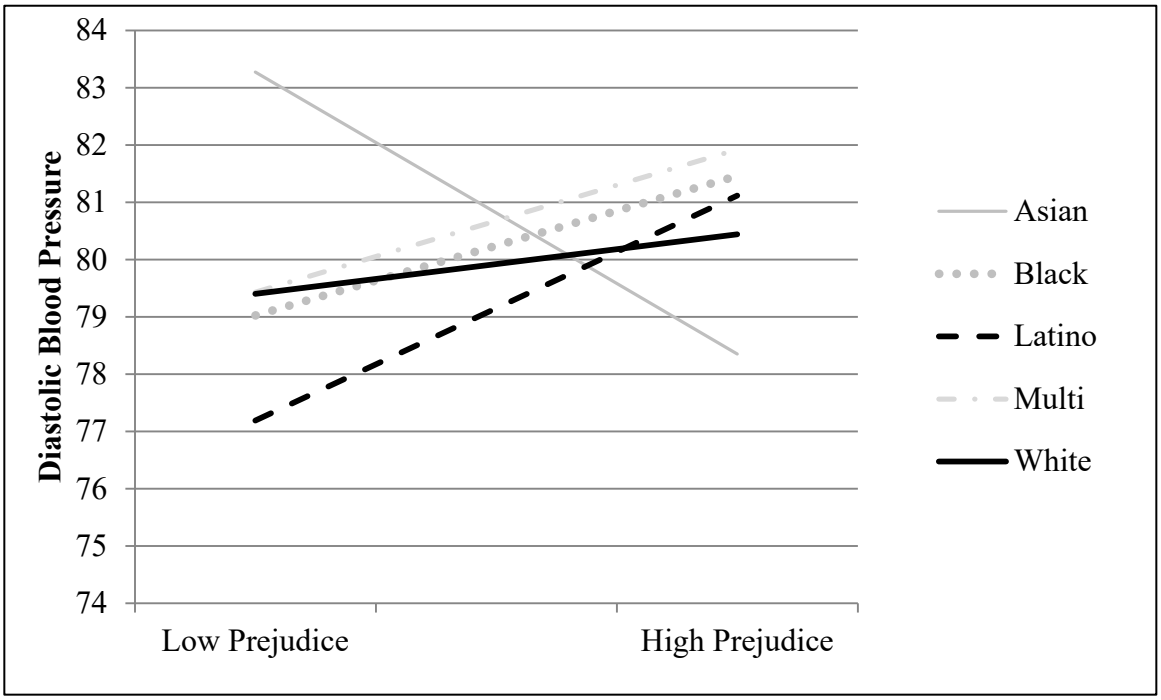


Figure A.2. Links between School-wide Perceptions of Peer Prejudice and Body Mass Index across Racial/Ethnic Groups

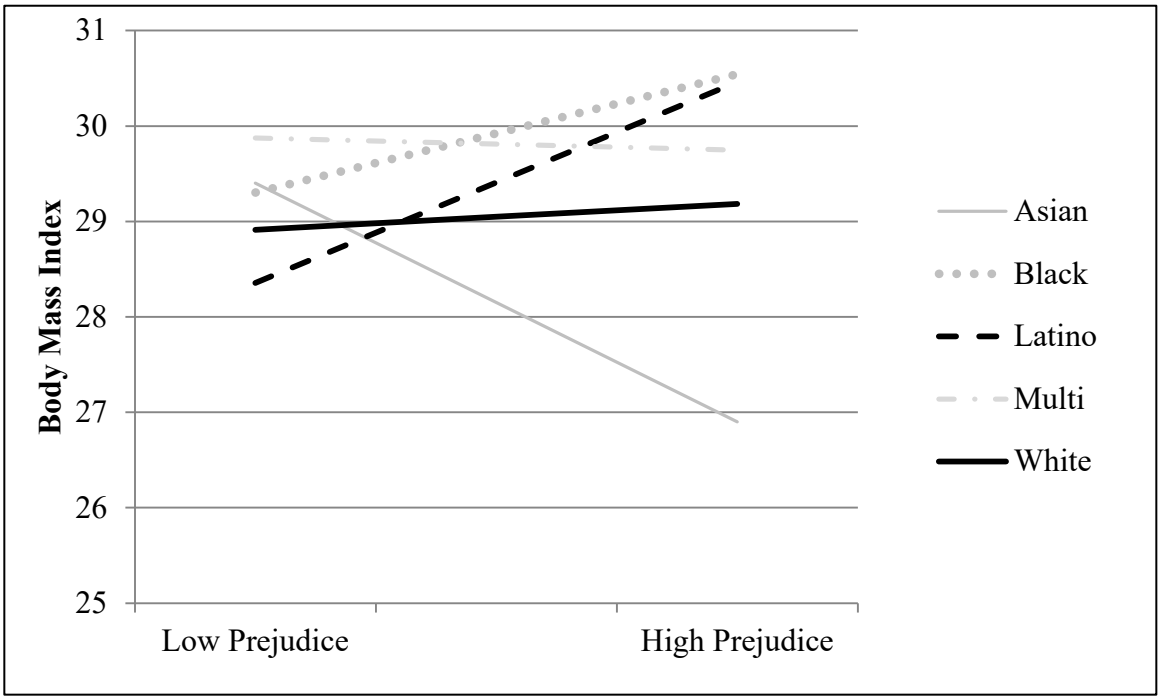


Figure A.3. Links between School-wide Perceptions of Peer Prejudice and C-Reactive Protein Levels across Racial/Ethnic Groups

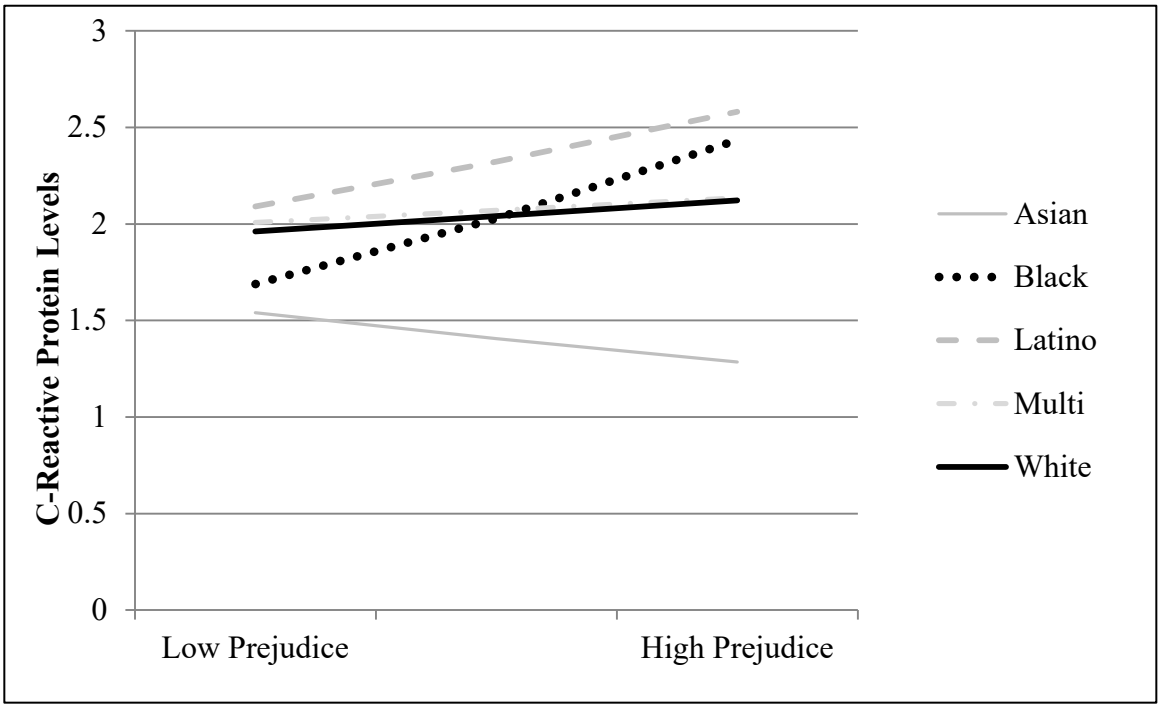
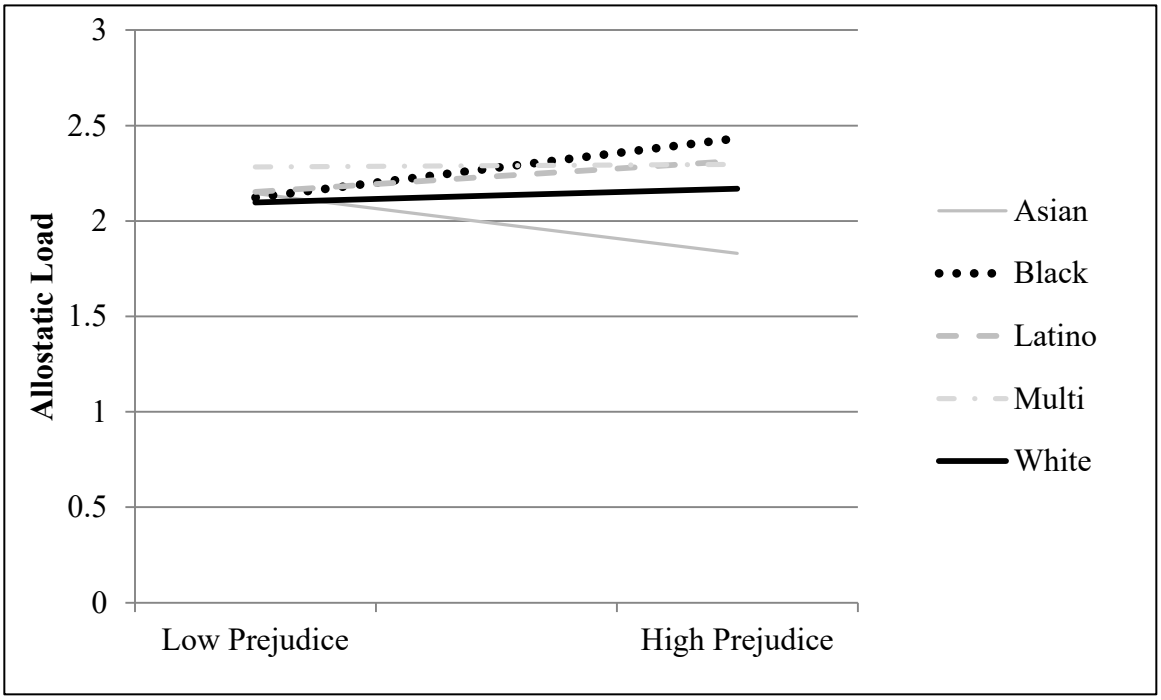


Figure A.4. Links between School-wide Perceptions of Peer Prejudice and Allostatic Load across Racial/Ethnic Groups



Appendix B: Alternate Model Specifications

A variety of additional analyses were considered in order to probe the robustness of the previously discussed results. These included models (1) assessing waist-to-height ratio in order to assuage concerns over the validity of BMI as an indicator of cardiometabolic risk, (2) considering an average of continuous z-scores of biomarkers as an alternate measure of allostatic load, (3) incorporating a variety of alternate measures of socioeconomic status, and (4) considering associations across different analytic samples in order to better attend to the many complex social factors and forces that contribute to racial/ethnic health inequities in the United States.

Waist-to-Height Ratio. First, additional models considered waist-to-height ratio (WHtR) in order to assuage concerns over the validity of BMI as an indicator of cardiometabolic risk (Tomiyama, Hunger, Nguyen-Cee, & Wells, 2016). Results from these models are reported in Tables B.1 through B.5. Results were generally consistent with those from models predicting body mass index, with three notable exceptions: GPA emerged as negatively linked with WHtR whereas it was not linked with BMI, but links between GPA and WHtR as well as links between school-wide perceptions of prejudice and WHtR did not vary across non-Hispanic Asian and White peers as they had in models predicting BMI. Variations in links between college completion and waist-to-height ratio, however, similarly varied across non-Hispanic Black and White youth as they had in models considering BMI.

Table B.1. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analysis Predicting Waist-to-Height Ratio

	Waist-to-Height Ratio *n* =14,564 Coef (SE)
Acadamic Achievement	
GPA	-0.01 (0.00)*
College completion	-0.03 (0.00)**
Family SES	-0.01 (0.00)**
Race/Ethnicity	
Asian	-0.01 (0.01)
Black	0.00 (0.01)
Latino	0.01 (0.01)*
Multiracial & other	0.01 (0.01)
Individual & Family Covariates	
Age	0.00 (0.00)**
Male	-0.03 (0.00)**
Low Birthweight	0.00 (0.01)
Poor prior health	0.04 (0.01)**
Pregnancy (at wave 4)	-- --
Parent single	0.01 (0.01)
Parent divorced/separated	0.00 (0.00)
School Covariates	
School avg GPA	0.01 (0.01)
School avg college completion	-0.02 (0.02)
School avg family SES	-0.01 (0.01)
School percent Asian	-0.03 (0.03)
School percent Black	0.02 (0.01)*
School percent Latino	0.05 (0.03)*
Small school	0.00 (0.00)
Large school	-0.01 (0.00)*
School has HS grades	0.01 (0.00)*
Urban	-0.01 (0.00)+
Rural	0.00 (0.00)
West	0.01 (0.01)
Midwest	0.01 (0.00)
Northeast	0.00 (0.00)

Note: Coef= Coefficient; SE= Standard Error; +$p < .10$, * $p < .05$, ** $p < .01$.

Table B.2. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analysis Considering Variation in Links between Achievement and Waist-to-Height Ratio across the Socioeconomic Spectrum

	Waist-to-Height Ratio *n* =14,564 Coef (SE)
Acadamic Achievement	
GPA	-0.01 (0.00)*
College completion	-0.02 (0.00)**
Family SES	-0.01 (0.00)**
Interactions	
GPA X Family SES	0.00 (0.00)
College X Family SES	0.00 (0.01)
Individual & Family Covariates	
Asian	-0.01 (0.01)
Black	0.00 (0.01)
Latino	0.01 (0.01)*
Multiracial & other	0.01 (0.01)
Age	0.00 (0.00)**
Male	-0.03 (0.00)**
Low Birthweight	0.00 (0.01)
Poor prior health	0.04 (0.01)**
Pregnancy (at wave 4)	-- --
Parent single	0.01 (0.01)
Parent divorced/separated	0.00 (0.00)
School Covariates	
School avg GPA	0.01 (0.01)
School avg college completion	-0.02 (0.02)
School avg family SES	-0.01 (0.01)
School percent Asian	0.02 (0.01)*
School percent Black	0.05 (0.03)*
School percent Latino	-0.03 (0.03)
Small school	0.00 (0.00)
Large school	-0.01 (0.00)*
School has HS grades	0.01 (0.00)*
Urban	-0.01 (0.00)+
Rural	0.00 (0.00)
West	0.01 (0.01)
Midwest	0.01 (0.00)
Northeast	0.00 (0.00)

Note: Coef= Coefficient; SE= Standard Error; +$p < .10$, * $p < .05$, ** $p < .01$.

Table B.3. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analysis Considering Variation in Links between Achievement and Waist-to-Height Ratio across Racial and Ethnic Groups

	Waist-to-Height *n* =14,564 Coef (SE)
Acadamic Achievement	
GPA	0.00 (0.00)*
College completion	-0.02 (0.00)**
Race/Ethnicity	
Asian	-0.01 (0.01)
Black	0.00 (0.01)
Latino	0.01 (0.01)*
Multiracial & other	0.01 (0.01)
Interactions	
GPA X Asian	-0.01 (0.01)
GPA X Black	0.00 (0.01)
GPA X Latino	0.00 (0.01)
GPA X Multiracial/Other	0.00 (0.01)
College X Asian	-0.01 (0.01)
College X Black	0.01 (0.01)*
College X Latino	0.00 (0.01)
College X Multiracial/Other	0.01 (0.01)
Individual & Family Covariates	
Age	0.00 (0.00)**
Male	-0.03 (0.00)**
Low Birthweight	0.00 (0.01)
Poor prior health	0.04 (0.01)**
Pregnancy (at wave 4)	-- --
Family SES	-0.01 (0.00)**
Parent single	0.01 (0.01)
Parent divorced/separated	0.00 (0.00)
School Covariates	
School avg GPA	0.01 (0.01)
School avg college completion	-0.02 (0.02)
School avg family SES	-0.01 (0.01)
School percent Asian	-0.03 (0.03)
School percent Black	0.02 (0.01)*
School percent Latino	0.05 (0.03)+
Small school	0.00 (0.00)
Large school	-0.01 (0.00)*
School has HS grades	0.01 (0.00)*
Urban	-0.01 (0.00)+
Rural	0.00 (0.00)
West	0.01 (0.01)
Midwest	0.01 (0.00)+
Northeast	0.00 (0.00)

Note: Coef= Coefficient; SE= Standard Error; +$p < .10$, * $p < .05$, ** $p < .01$.

Table B.4. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analysis Considering School-wide Socioeconomic Status as a Moderator of Links between Achievement, Family SES, and Waist-to-Height Ratio

	Waist-to-Height Ratio *n* =14,564 Coef (SE)
Acadamic Achievement	
GPA	-0.01 (0.00)**
College completion	-0.02 (0.00)**
Family SES	-0.01 (0.00)**
School SES	-0.01 (0.01)
Two Way Interactions	
GPA X Family SES	0.00 (0.00)
College X Family SES	0.00 (0.01)
Family SES X School SES	0.00 (0.01)
GPA X School SES	-0.01 (0.01)
College X School SES	0.01 (0.01)
Three Way Interactions	
GPA X Family SES X School SES	0.01 (0.01)
College X Family SES X School SES	-0.01 (0.01)

Note: Coef= Coefficient; SE= Standard Error; +$p < .10$, * $p < .05$, ** $p < .01$. All covariates listed in Tables B.1 through B.3 are also included in this model.

Table B.5. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analysis Considering School-wide Perceptions of Peer Prejudice as a Moderator of Links between Achievement and Waist-to-Height Ratio across Racial/Ethnic Groups

	Waist-to-Height *n* =14,564 Coef (SE)
Acadamic Achievement	
GPA	-0.01 (0.00)*
College completion	-0.02 (0.00)**
Race/Ethnicity	
Asian	-0.01 (0.01)
Black	0.00 (0.01)
Latino	0.01 (0.01)*
Multiracial & other	0.01 (0.01)
School Perceptions of Prejudice	0.01 (0.01)
Two Way Interactions	
GPA X Asian	-0.01 (0.01)
GPA X Black	0.00 (0.01)
GPA X Latino	0.00 (0.01)
GPA X Multiracial/Other	0.00 (0.01)
College X Asian	-0.01 (0.01)
College X Black	0.01 (0.01)*
College X Latino	0.00 (0.01)
College X Multiracial/Other	0.01 (0.01)
Prejudice X Asian	-0.04 (0.04)
Prejudice X Black	0.02 (0.01)
Prejudice X Latino	0.02 (0.02)
Prejudice X Multiracial/Other	0.00 (0.01)
GPA X Prejudice	0.00 (0.01)
College X Prejudice	0.00 (0.01)
Three Way Interactions	
GPA X Asian X Prejudice	0.01 (0.04)
GPA X Black X Prejudice	-0.01 (0.02)
GPA X Latino X Prejudice	0.01 (0.03)
GPA X Multi/Other X Prejudice	-0.01 (0.02)
College X Asian X Prejudice	0.01 (0.06)
College X Black X Prejudice	-0.01 (0.02)
College X Latino X Prejudice	0.00 (0.03)
College X Multi/Other X Prejudice	0.02 (0.03)

Note: Coef= Coefficient; SE= Standard Error; +$p < .10$, * $p < .05$, ** $p < .01$. All covariates listed in Tables B.1 through B.3 are also included in this model.

Alternative measure of allostatic load. Additional models also considered an alternative coding approach to conceptualizing allostatic load. As previously discussed, there are a variety of ways to methodologically conceptualize allostatic load (AL) (e.g., Dich, Doan, & Evans, 2015; Evans, 2003; Wickrama, O'Neal, & Lee, 2015). Prior results were discussed utilizing the most common method of coding allostatic load (Juster et al., 2010). However, recent research utilizing the Add Health data has also taken another, less-common approach to conceptualizing AL (Wickrama et al., 2016). In this approach, continuous z-scores of each biomarker are averaged to reflect the overall allostatic load of an individual. Although this approach is less common than summing indicators of high risk on biomarkers of interest, there is evidence to suggest that this approach also reliably predicts physiological health (Seeman, Singer, Rowe, Horwitz, & McEwen, 1997). Thus, as a sensitivity analysis, models were run with an average of the continuous z-scores of diastolic blood pressure, systolic blood pressure, body mass index, Epstein-Barr virus antibodies, and C-reactive protein levels.

Results, presented in Tables B.6 – B.10, were generally consistent with the models previously presented. However, some evidence emerged to suggest that this averaged z-score may be more sensitive than the alternative sum of high-risk indicators, as GPA was significantly linked to lower levels of AL when measured utilizing z-scores but not as a sum of risk indicators. Additionally, links between GPA and allostatic load emerged as significantly different for Latino and White adolescents, with GPA positively associated with inflammation among Latino youth (see Figure B.1). Links between school-wide perceived prejudice and allostatic load, as seen in Figure B.2, also significantly differed for Latino young adults and their non-Hispanic White peers, such

that higher levels of perceived prejudice by students within schools were more strongly associated with higher levels of inflammation in later adulthood for Latino students than for their non-Hispanic White peers. Although neither of these links significantly varied in the previous coding of allostatic load, these patterns align with significant variations across other indicators of physiological health outcomes. Variations in links between college completion and allostatic load, however, continued to vary across non-Hispanic Black and White youth with this alternative coding of AL.

Table B.6. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analysis Predicting Allostatic Load Coded as an Average of Standardized Biomarkers

	Allostatic Load *n* =12,672 Coef (SE)
Acadamic Achievement	
GPA	-0.14 (0.06)*
College completion	-0.52 (0.08)**
Family SES	-0.20 (0.07)**
Race/Ethnicity	
Asian	-0.41 (0.20)*
Black	0.36 (0.19)+
Latino	0.06 (0.17)
Multiracial & other	0.34 (0.18)+
Individual & Family Covariates	
Age	0.01 (0.00)**
Male	0.46 (0.09)**
Low Birthweight	-0.02 (0.16)
Poor prior health	0.84 (0.25)**
Pregnancy (at wave 4)	-- --
Parent single	0.25 (0.23)
Parent divorced/separated	-0.06 (0.10)
School Covariates	
School avg GPA	0.32 (0.25)
School avg college completion	-0.27 (0.57)
School avg family SES	-0.43 (0.10)
School percent Asian	0.15 (0.86)
School percent Black	0.35 (0.29)
School percent Latino	-0.09 (0.75)
Small school	0.04 (0.11)
Large school	-0.05 (0.11)
School has HS grades	0.30 (0.13)*
Urban	-0.19 (0.10)+
Rural	0.04 (0.14)
West	-0.11 (0.14)
Midwest	0.05 (0.10)
Northeast	-0.17 (0.11)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01.

Table B.7. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analysis Considering Variations in Link between Achievement and Allostatic Load Coded as an Average of Standardized Biomarkers across the Socioeconomic Spectrum

	Allostatic Load *n* =12,672 Coef (SE)
Acadamic Achievement	
GPA	-0.14 (0.06)*
College completion	-0.49 (0.09)**
Family SES	-0.20 (0.07)**
Interactions	
GPA X Family SES	-0.04 (0.09)
College X Family SES	-0.16 (0.17)
Individual & Family Covariates	
Asian	-0.42 (0.20)*
Black	0.36 (0.19)+
Latino	0.07 (0.17)
Multiracial & other	0.34 (0.18)+
Age	0.01 (0.00)**
Male	0.45 (0.09)**
Low Birthweight	-0.02 (0.16)
Poor prior health	0.84 (0.25)**
Pregnancy (at wave 4)	-- --
Parent single	0.25 (0.23)
Parent divorced/separated	-0.06 (0.10)
School Covariates	
School avg GPA	0.30 (0.25)
School avg college completion	-0.28 (0.57)
School avg family SES	-0.38 (0.3)
School percent Asian	0.18 (0.85)
School percent Black	0.35 (0.29)
School percent Latino	-0.05 (0.75)
Small school	0.05 (0.11)
Large school	-0.05 (0.11)
School has HS grades	0.30 (0.13)*
Urban	-0.19 (0.10)+
Rural	0.05 (0.14)
West	-0.12 (0.14)
Midwest	0.05 (0.10)
Northeast	-0.17 (0.11)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01.

Table B.8. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analysis Considering Variations in Link between Achievement and Allostatic Load Coded as an Average of Standardized Biomarkers across Racial/Ethnic Groups

	Allostatic Load *n* =12,672 Coef (SE)
Acadamic Achievement	
GPA	-0.12 (0.06)*
College completion	-0.47 (0.09)**
Race/Ethnicity	
Asian	-0.32 (0.23)
Black	0.42 (0.19)*
Latino	0.13 (0.18)
Multiracial & other	0.38 (0.21)+
Interactions	
GPA X Asian	-0.07 (0.26)
GPA X Black	0.02 (0.18)
GPA X Latino	0.38 (0.15)**
GPA X Multiracial/Other	-0.04 (0.29)
College X Asian	-0.85 (0.56)
College X Black	0.48 (0.24)*
College X Latino	-0.08 (0.33)
College X Multiracial/Other	0.40 (0.53)
Individual & Family Covariates	
Age	0.01 (0.00)**
Male	0.47 (0.09)**
Low Birthweight	-0.02 (0.16)
Poor prior health	0.85 (0.24)**
Pregnancy (at wave 4)	-- --
Family SES	-0.21 (0.07)**
Parent single	0.27 (0.23)
Parent divorced/separated	-0.06 (0.10)
School Covariates	
School avg GPA	0.24 (0.25)
School avg college completion	-0.88 (0.37)*
School avg family SES	-0.09 (0.12)
School percent Asian	0.18 (0.84)
School percent Black	0.41 (0.28)
School percent Latino	0.23 (0.69)
Small school	0.02 (0.11)
Large school	-0.07 (0.11)
School has HS grades	0.29 (0.13)*
Urban	-0.20 (0.10)*
Rural	0.08 (0.14)
West	-0.15 (0.13)
Midwest	0.05 (0.10)
Northeast	-0.14 (0.11)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01.

Figure B.1. Links between Grade Point Average and Allostatic Load Coded as an Average of Standardized Biomarkers across Racial/Ethnic Groups

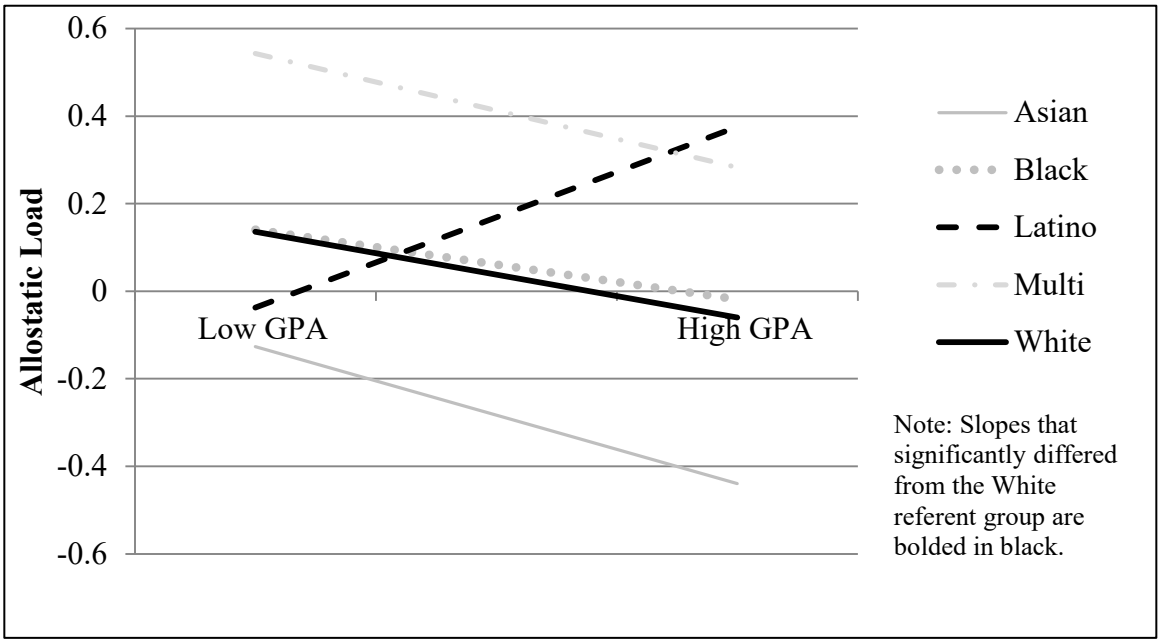


Table B.9. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analysis Considering School-wide Socioeconomic Status as a Moderator of Link between Achievement, Family SES, and Allostatic Load Coded as an Average of Standardized Biomarkers

	Allostatic Load *n* =12,672 Coef (SE)
Acadamic Achievement	
GPA	-0.17 (0.07)**
College completion	-0.48 (0.09)**
Family SES	-0.22 (0.07)**
School SES	-0.40 (0.33)
Two Way Interactions	
GPA X Family SES	-0.04 (0.09)
College X Family SES	-0.17 (0.20)
Family SES X School SES	-0.09 (0.21)
GPA X School SES	-0.13 (0.23)
College X School SES	-0.09 (0.38)
Three Way Interactions	
GPA X Family SES X School SES	0.45 (0.21)*
College X Family SES X School SES	0.06 (0.39)

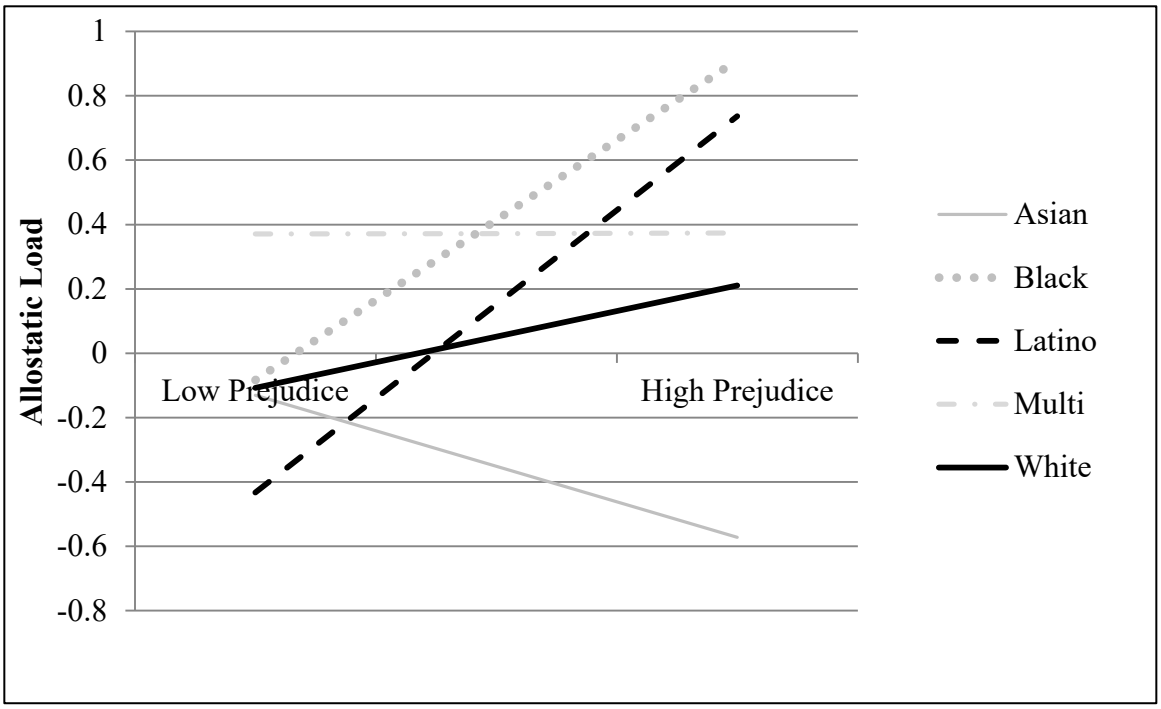
Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01. All covariates listed in Tables B.6 through B.8 are also included in this model.

Table B.10. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analysis Considering School-wide Perceptions of Peer Prejudice as a Moderator of Link between Achievement and Allostatic Load Coded as an Average of Standardized Biomarkers

	Allostatic *n* =12,672 Coef (SE)
Acadamic Achievement	
GPA	-0.14 (0.07)*
College completion	-0.48 (0.09)*
Race/Ethnicity	
Asian	-0.40 (0.23)+
Black	0.36 (0.19)+
Latino	0.10 (0.18)
Multiracial & other	0.32 (0.21)
School Perceptions of Prejudice	0.43 (0.23)+
Two Way Interactions	
GPA X Asian	-0.06 (0.28)
GPA X Black	0.02 (0.18)
GPA X Latino	0.38 (0.15)*
GPA X Multiracial/Other	-0.04 (0.29)
College X Asian	-0.95 (0.58)
College X Black	0.37 (0.15)*
College X Latino	-0.09 (0.33)
College X Multiracial/Other	0.35 (0.54)
Prejudice X Asian	-1.03 (1.30)
Prejudice X Black	0.91 (0.35)*
Prejudice X Latino	1.15 (0.54)*
Prejudice X Multiracial/Other	-0.43 (0.54)
GPA X Prejudice	0.09 (0.19)
College X Prejudice	-0.38 (0.31)
Three Way Interactions	
GPA X Asian X Prejudice	0.55 (1.59)
GPA X Black X Prejudice	-0.53 (0.54)
GPA X Latino X Prejudice	0.55 (0.83)
GPA X Multi/Other X Prejudice	0.22 (0.83)
College X Asian X Prejudice	-0.58 (2.36)
College X Black X Prejudice	-0.66 (0.72)
College X Latino X Prejudice	0.09 (1.20)
College X Multi/Other X Prejudice	0.07 (1.25)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01. All covariates listed in Tables B.6 through B.8 are also included in this model.

Figure B.2. Links between School-wide Perceptions of Peer Prejudice and Allostatic Load Coded as an Average of Standardized Biomarkers across Racial/Ethnic Groups



Alternative measures of SES. In order to further probe potential links between family socioeconomic resources and later physiological health, a number of alternative conceptualizations of socioeconomic status were considered.

Considering subcomponents of socioeconomic status. A wealth of research has unearthed links between composite measures of family socioeconomic status and a variety of developmental outcomes (see, for example, Letourneau, Duffet-leger, Levac, Watson, & Young-Morris, 2013). Such composite measures attempt to capture the complex interplay of individual components of resources and status. However, research also suggests that individual subcomponents of socioeconomic status (primarily income, parental education, and parental occupation) may exert unique effects on health (Adler & Rehkpof, 2008; Braveman et al., 2005). Thus, the first set of alternative socioeconomic models separately considered the three subcomponents of socioeconomic status in the current study—income, parental education, and parental job prestige—and their links with physiological health.

Income. Tables B.11 through B.13 display results from multilevel OLS models utilizing a discrete measure of family income to predict the six physiological health outcomes. As seen in Table B.11, income emerged as a weaker predictor of inflammation than the composite measure of socioeconomic status. Although income maintained negative links with BMI and C-reactive protein levels previously demonstrated in models considering SES, family income did not emerge as linked with either Epstein-Barr virus antibodies nor allostatic load as socioeconomic status had. Turning to models considering the school's potential role in augmenting links of interest, the results displayed in Table B.13 also suggest that the consideration of family income as opposed to family SES

weakened the pattern of results. In prior models, heightened school SES exacerbated negative associations between GPA and stress biomarkers; in models considering income as a subcomponent, such patterns did not emerge.

Parental education. The next iteration of analyses considered the highest level of parental education as a discrete predictor of later physiological health (see Tables B.14 through B.16). Much like income, the pattern of main effects reported in Table B.14 is weaker than those that emerged in models utilizing the SES composite; parental education emerged as negatively linked with BMI and allostatic load, but did not predict levels of Epstein-Barr virus antibodies nor C-reactive protein levels. Unlike models considering income, however, school socioeconomic resources exacerbated links between GPA and later physiological health (see Table B.16), as they had in prior models considering the SES composite.

Parental job prestige. The results in Tables B.17 through B.19 suggest that the final subcomponent of family socioeconomic status, parental job prestige, was the weakest predictor of physiological health. As seen in Table B.17, parental job prestige only significantly predicted allostatic load at wave 4; links with Epstein-Barr virus antibodies approached significance. Additionally, Table B.19 suggests that the school-wide level of such socioeconomic resources did not interact with parental job prestige and adolescent achievement to predict later physiological health. Taken together, these results suggest that more multidimensional conceptualizations of family socioeconomic status may be more sensitive than those approaches that consider independent subcomponents of SES.

Table B.11. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analyses Predicting Physiological Health Outcomes, with Family Income

	Diastolic Blood Pressure	Systolic Blood Pressure	Body Mass Index	Epstein-Barr Virus Antibodies	C-Reactive Protein Levels	Allostatic Load
	n =14,296	*n* =14,296	*n* =14,564	*n* =13,132	*n* =13,132	*n* =12,672
	Coef (SE)	Coef (SE)	Coef (SE)	Coef (SE)	Coef (SE)	Coef (SE)
Acadamic Achievement						
GPA	-0.14 (0.20)	-0.27 (0.28)	-0.40 (0.16)*	-0.01 (0.01)	-0.04 (0.03)	-0.04 (0.03)
College completion	-0.85 (0.33)**	-0.71 (0.35)*	-1.40 (0.20)**	-0.03 (0.02)+	-0.21 (0.04)**	-0.17 (0.04)**
Family Income	-0.02 (0.03)	-0.04 (0.04)	-0.05 (0.02)**	0.00 (0.00)	-0.01 (0.00)*	-0.01 (0.00)
Race/Ethnicity						
Asian	1.67 (0.93)+	1.04 (1.46)	-1.02 (0.66)	-0.03 (0.05)	-0.29 (0.10)**	-0.14 (0.09)
Black	0.41 (0.58)	1.05 (0.76)	0.75 (0.50)	0.11 (0.03)**	-0.02 (0.07)	0.12 (0.08)
Latino	-0.27 (0.62)	0.03 (0.74)*	0.54 (0.43)	0.06 (0.04)	0.16 (0.07)*	0.11 (0.07)+
Multiracial & other	0.99 (0.46)*	1.02 (0.61)+	0.82 (0.48)+	0.01 (0.03)	0.04 (0.07)	0.16 (0.08)*
Individual & Family Covariates						
Age	0.04 (0.01)**	0.02 (0.01)*	0.01 (0.01)+	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)*
Male	4.23 (0.25)**	9.34 (0.32)**	-0.14 (0.23)	-0.15 (0.02)**	-0.51 (0.03)**	0.23 (0.05)**
Low Birthweight	0.40 (0.50)	0.07 (0.68)	-0.59 (0.41)	0.03 (0.03)	0.00 (0.07)	0.02 (0.07)
Poor prior health	1.20 (0.5)*	2.27 (0.60)**	2.69 (0.39)**	0.05 (0.03)+	0.28 (0.09)**	0.24 (0.08)**
Pregnancy (at wave 4)	-- --	-- --	-- --	-0.11 (0.04)**	0.75 (0.06)**	-- --
Parent single	0.75 (0.67)	0.40 (0.89)	0.30 (0.52)	0.04 (0.04)	0.03 (0.09)	0.06 (0.09)
Parent divorced/separated	0.21 (0.35)	-0.17 (0.48)	-0.05 (0.27)	-0.01 (0.02)	-0.01 (0.04)	-0.01 (0.05)
School Covariates						
School avg GPA	0.48 (0.78)	1.27 (1.08)	0.55 (0.52)	0.01 (0.04)	-0.03 (0.11)	0.08 (0.10)
School avg college completion	-2.72 (1.79)	-3.03 (2.49)	-1.94 (1.33)	-0.03 (0.09)	-0.10 (0.21)	-0.38 (0.16)*
School avg family income	0.16 (0.17)	0.20 (0.23)	-0.05 (0.12)	-0.01 (0.01)	-0.02 (0.02)	-0.10 (0.12)
School percent Asian	-1.97 (2.21)	-3.62 (3.97)	-1.75 (1.87)	0.27 (0.18)	-0.14 (0.39)	-0.03 (0.29)
School percent Black	0.00 (1.10)	0.95 (1.64)	1.66 (0.74)*	0.07 (0.05)	0.16 (0.12)	0.12 (0.11)
School percent Latino	-0.73 (2.03)	2.10 (2.85)	4.89 (1.36)**	-0.26 (0.14)+	0.41 (0.27)	0.09 (0.25)
Small school	-0.06 (0.37)	-0.08 (0.51)	0.40 (0.24)+	-0.01 (0.02)	0.00 (0.05)	0.01 (0.04)
Large school	-0.18 (0.37)	-0.33 (0.58)	-0.33 (0.23)	-0.01 (0.02)	-0.08 (0.04)+	-0.04 (0.04)
School has HS grades	0.70 (0.39)+	0.74 (0.54)	0.76 (0.26)**	0.03 (0.02)	0.11 (0.06)+	0.14 (0.05)**
Urban	-0.47 (0.35)	-1.07 (0.51)*	-0.47 (0.23)+	0.01 (0.02)	-0.02 (0.04)	-0.10 (0.04)**
Rural	0.03 (0.47)	0.22 (0.53)	0.36 (0.30)	0.00 (0.02)	0.06 (0.06)	0.04 (0.05)
West	-0.37 (0.52)	-0.14 (0.88)	0.02 (0.31)	0.03 (0.02)	-0.06 (0.06)	-0.04 (0.05)
Midwest	-0.18 (0.34)	0.29 (0.47)	-0.04 (0.25)	0.05 (0.02)*	0.02 (0.04)	0.04 (0.04)
Northeast	-0.77 (0.39)*	-0.59 (0.55)	-0.18 (0.28)	0.04 (0.02)	-0.01 (0.05)	0.00 (0.04)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01.

Table B.12. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analyses Considering Variations in Link between Achievement and Physiological Health Outcomes across the Socioeconomic Spectrum, with Family Income

	Diastolic Blood Pressure *n* =14,296 Coef (SE)	Systolic Blood Pressure *n* =14,296 Coef (SE)	Body Mass Index *n* =14,564 Coef (SE)	Epstein-Barr Virus Antibodies *n* =13,132 Coef (SE)	C-Reactive Protein Levels *n* =13,132 Coef (SE)	Allostatic Load *n* =12,672 Coef (SE)
Acadamic Achievement						
GPA	-0.14 (0.20)	-0.27 (0.28)	-0.40 (0.16)*	-0.01 (0.01)	-0.04 (0.03)+	-0.04 (0.03)
College completion	-0.83 (0.33)*	-0.70 (0.35)*	-1.38 (0.02)**	-0.03 (0.02)+	-0.21 (0.04)**	-0.17 (0.04)**
Family income	-0.02 (0.03)	-0.04 (0.05)	-0.05 (0.02)*	0.00 (0.00)	-0.01 (0.00)+	-0.01 (0.00)
Interactions						
GPA X Family income	0.01 (0.04)	0.03 (0.06)	-0.01 (0.03)	0.00 (0.00)	0.00 (0.01)	0.00 (0.01)
College X Family income	-0.05 (0.06)	-0.06 (0.09)	-0.05 (0.05)	0.00 (0.00)	0.00 (0.01)	-0.01 (0.01)
Individual & Family Covariates						
Asian	1.67 (0.93)+	1.04 (1.46)	-1.02 (0.67)	-0.03 (0.05)	-0.29 (0.10)**	-0.14 (0.09)
Black	0.41 (0.58)	1.04 (0.75)	0.75 (0.50)	0.11 (0.03)**	-0.02 (0.07)	0.12 (0.08)
Latino	-0.27 (0.62)	0.03 (0.75)	0.55 (0.44)	0.06 (0.04)	0.16 (0.07)*	0.11 (0.07)+
Multiracial & other	0.99 (0.46)*	1.01 (0.61)+	0.82 (0.48)+	0.01 (0.03)	0.04 (0.07)	0.16 (0.08)*
Age	0.04 (0.01)**	0.02 (0.01)*	0.01 (0.01)+	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)*
Male	4.23 (0.24)**	9.34 (0.32)**	-0.14 (0.23)	-0.15 (0.02)**	-0.51 (0.03)**	0.22 (0.04)**
Low Birthweight	0.40 (0.50)	0.08 (0.68)	-0.58 (0.41)	0.03 (0.03)	0.00 (0.07)	0.02 (0.07)
Poor prior health	1.20 (0.50)*	2.27 (0.60)**	2.68 (0.39)**	0.05 (0.03)+	0.28 (0.09)**	0.24 (0.08)**
Pregnancy (at wave 4)	-- --	-- --	-- --	-0.11 (0.04)**	0.75 (0.06)**	-- --
Parent single	0.76 (0.67)	0.41 (0.89)	0.31 (0.52)	0.04 (0.04)	0.03 (0.09)	0.06 (0.09)
Parent divorced/separated	0.21 (0.34)	-0.18 (0.48)	-0.04 (0.27)	-0.01 (0.02)	-0.01 (0.04)	-0.01 (0.05)
School Covariates						
School avg GPA	0.44 (0.77)	1.24 (1.07)	0.52 (0.52)	0.01 (0.04)	-0.03 (0.11)	0.07 (0.10)
School avg college completion	-2.69 (1.8)	-2.97 (2.49)	-1.93 (1.32)	-0.03 (0.08)	-0.10 (0.21)	-0.37 (0.16)*
School avg family income	0.17 (0.17)	0.21 (0.23)	-0.04 (0.12)	-0.01 (0.01)	-0.02 (0.02)	-0.09 (0.12)
School percent Asian	-1.93 (2.22)	-3.58 (3.99)	-1.72 (1.87)	0.44 (0.18)*	-0.14 (0.39)	-0.03 (0.29)
School percent Black	0.02 (1.10)	0.97 (1.64)	1.68 (0.74)*	0.07 (0.05)+	0.16 (0.12)	0.12 (0.11)
School percent Latino	-0.70 (2.03)	2.12 (2.83)	4.94 (1.36)**	-0.26 (0.14)+	0.41 (0.27)	0.09 (0.25)
Small school	-0.05 (0.37)	-0.08 (0.51)	0.40 (0.24)+	-0.01 (0.02)	0.00 (0.05)	0.01 (0.04)
Large school	-0.19 (0.37)	-0.33 (0.58)	-0.34 (0.23)	-0.01 (0.02)	-0.08 (0.04)+	-0.04 (0.04)
School has HS grades	0.69 (0.40)+	0.74 (0.54)	0.75 (0.26)**	0.03 (0.02)	0.11 (0.06)+	0.14 (0.05)**
Urban	-0.47 (0.35)	-1.07 (0.51)*	-0.47 (0.23)*	0.01 (0.02)	-0.02 (0.04)	-0.10 (0.04)**
Rural	0.04 (0.47)	0.23 (0.53)	0.37 (0.30)	0.00 (0.02)	0.06 (0.06)	0.04 (0.05)
West	-0.39 (0.52)	-0.15 (0.88)	0.00 (0.32)	0.03 (0.02)	-0.06 (0.06)	-0.04 (0.05)
Midwest	-0.18 (0.34)	0.29 (0.47)	-0.05 (0.25)	0.05 (0.02)*	0.02 (0.04)	0.04 (0.04)
Northeast	-0.77 (0.39)*	-0.59 (0.56)	-0.18 (0.28)	0.04 (0.02)+	-0.01 (0.05)	0.00 (0.04)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01.

Table B.13. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analyses Considering School-wide Socioeconomic Status as a Moderator of Link between Achievement, Family Income, and Physiological Health Outcomes

	Diastolic Blood Pressure *n* =14,296 Coef (SE)	Systolic Blood Pressure *n* =14,296 Coef (SE)	Body Mass Index *n* =14,564 Coef (SE)	Epstein-Barr Virus Antibodies *n* =13,132 Coef (SE)	C-Reactive Protein Levels *n* =13,132 Coef (SE)	Allostatic Load *n* =12,672 Coef (SE)
Acadamic Achievement						
GPA	-0.17 (0.20)	-0.30 (0.28)	-0.42 (0.15)**	-0.01 (0.01)	-0.04 (0.03)	-0.04 (0.03)
College completion	-0.82 (0.33)*	-0.67 (0.36)+	-1.35 (0.20)*	-0.03 (0.02)+	-0.21 (0.04)**	-0.16 (0.04)**
Family income	-0.02 (0.04)	-0.05 (0.06)	-0.06 (0.03)*	0.00 (0.00)	-0.01 (0.01)*	-0.01 (0.01)
School income	0.12 (0.20)	0.14 (0.03)	-0.02 (0.13)	0.00 (0.01)	-0.02 (0.02)	-0.15 (0.14)
Two Way Interactions						
GPA X Family income	0.01 (0.05)	0.02 (0.07)	-0.02 (0.04)	0.00 (0.00)	0.00 (0.01)	0.00 (0.01)
College X Family income	-0.05 (0.08)	-0.08 (0.14)	-0.06 (0.07)	0.00 (0.00)	-0.01 (0.01)	-0.01 (0.01)
Family income X School income	0.00 (0.01)	0.00 (0.02)	0.01 (0.01)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
GPA X School income	-0.07 (0.13)	-0.04 (0.18)	-0.04 (0.10)	0.00 (0.01)	0.01 (0.02)	0.00 (0.02)
College X School income	0.25 (0.19)	0.22 (0.29)	-0.14 (0.15)	-0.01 (0.01)	-0.03 (0.03)	-0.03 (0.03)
Three Way Interactions						
GPA X Family income X School income	0.02 (0.01)	0.01 (0.02)	0.01 (0.01)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
College X Family income X School income	-0.02 (0.03)	-0.01 (0.04)	0.00 (0.02)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01. All covariates listed in Tables B.11 and B.12 are included in these models.

Table B.14. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analyses Predicting Physiological Health Outcomes, with Highest Parental Education

	Diastolic Blood Pressure *n* =14,296 Coef (SE)	Systolic Blood Pressure *n* =14,296 Coef (SE)	Body Mass Index *n* =14,564 Coef (SE)	Epstein-Barr Virus Antibodies *n* =13,132 Coef (SE)	C-Reactive Protein Levels *n* =13,132 Coef (SE)	Allostatic Load *n* =12,672 Coef (SE)
Acadamic Achievement						
GPA	-0.14 (0.20)	-0.27 (0.29)	-0.36 (0.16)*	-0.01 (0.01)	-0.04 (0.03)	-0.03 (0.03)
College completion	-0.86 (0.33)**	-0.73 (0.35)*	-1.39 (0.20)**	-0.03 (0.02)+	-0.21 (0.04)**	-0.16 (0.04)**
Parental education	-0.02 (0.05)	-0.03 (0.08)	-0.10 (0.04)*	-0.01 (0.00)	-0.01 (0.01)	-0.02 (0.01)*
Race/Ethnicity						
Asian	1.67 (0.93)+	1.04 (1.45)	-0.99 (0.65)	-0.03 (0.05)	-0.29 (0.10)**	-0.13 (0.09)
Black	0.43 (0.58)	1.08 (0.75)	0.80 (0.50)	0.11 (0.03)**	-0.01 (0.07)	0.13 (0.08)
Latino	-0.30 (0.62)	0.02 (0.77)	0.45 (0.44)	0.06 (0.04)	0.15 (0.07)*	0.09 (0.07)
Multiracial & other	1.00 (0.45)*	1.03 (0.61)+	0.81 (0.49)+	0.01 (0.03)	0.04 (0.08)	0.16 (0.08)*
Individual & Family Covariates						
Age	0.04 (0.01)**	0.02 (0.01)*	0.01 (0.01)+	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)*
Male	4.24 (0.24)**	9.34 (0.32)**	-0.12 (0.23)	-0.14 (0.01)**	-0.50 (0.03)**	0.23 (0.04)**
Low Birthweight	0.39 (0.50)	0.08 (0.68)	-0.58 (0.41)	0.03 (0.03)	0.00 (0.07)	0.02 (0.07)
Poor prior health	1.20 (0.50)*	2.26 (0.60)**	2.67 (0.39)**	0.05 (0.03)+	0.27 (0.09)**	0.24 (0.08)**
Pregnancy (at wave 4)	-- --	-- --	-- --	-0.11 (0.04)**	0.75 (0.06)**	-- --
Parent single	0.77 (0.67)	0.44 (0.89)	0.31 (0.52)	0.04 (0.04)	0.03 (0.08)	0.06 (0.09)
Parent divorced/separated	0.23 (0.35)	-0.13 (0.47)	0.00 (0.27)	-0.01 (0.02)	-0.01 (0.04)	-0.01 (0.05)
School Covariates						
School avg GPA	0.70 (0.78)	1.43 (1.07)	0.62 (0.51)	0.01 (0.04)	-0.01 (0.11)	0.08 (0.10)
School avg college completion	0.47 (1.80)	-0.58 (2.42)	-2.49 (1.50)+	-0.07 (0.09)	-0.22 (0.27)	-0.38 (0.15)*
School avg parental education	-0.49 (0.30)+	-0.28 (0.40)	0.01 (0.23)	0.00 (0.02)	-0.01 (0.05)	-0.10 (0.12)
School percent Asian	-2.16 (2.21)	-3.76 (3.99)	-1.88 (1.81)	0.26 (0.19)	-0.15 (0.39)	-0.05 (0.29)
School percent Black	-0.34 (1.05)	0.58 (1.56)	1.84 (0.67)**	0.09 (0.04)*	0.21 (0.11)+	0.13 (0.11)
School percent Latino	-2.89 (2.33)	0.52 (3.11)	5.17 (1.50)**	-0.24 (0.14)+	0.45 (0.31)	0.11 (0.25)
Small school	-0.01 (0.35)	-0.04 (0.50)	0.37 (0.24)	-0.01 (0.02)	-0.01 (0.05)	0.01 (0.04)
Large school	-0.13 (0.37)	-0.32 (0.59)	-0.30 (0.22)	0.00 (0.02)	-0.07 (0.04)	-0.04 (0.04)
School has HS grades	0.73 (0.39)+	0.77 (0.54)	0.76 (0.26)**	0.03 (0.02)	0.10 (0.06)+	0.14 (0.05)**
Urban	-0.46 (0.35)	-1.06 (0.52)*	-0.48 (0.24)*	0.01 (0.02)	-0.02 (0.04)	-0.10 (0.04)**
Rural	-0.18 (0.44)	0.04 (0.49)	0.39 (0.31)	0.01 (0.02)	0.07 (0.06)	0.04 (0.05)
West	-0.14 (0.52)	0.03 (0.86)	0.00 (0.31)	0.03 (0.02)	-0.07 (0.06)	-0.04 (0.05)
Midwest	-0.12 (0.32)	0.36 (0.47)	-0.05 (0.24)	0.05 (0.02)*	0.01 (0.04)	0.04 (0.04)
Northeast	-0.83 (0.39)*	-0.63 (0.56)	-0.19 (0.28)	0.04 (0.02)+	-0.01 (0.05)	-0.01 (0.04)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01.

Table B.15. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analyses Considering Variations in Link between Achievement and Physiological Health Outcomes across the Socioeconomic Spectrum, with Highest Parental Education

	Diastolic Blood Pressure *n* =14,296 Coef (SE)	Systolic Blood Pressure *n* =14,296 Coef (SE)	Body Mass Index *n* =14,564 Coef (SE)	Epstein-Barr Virus Antibodies *n* =13,132 Coef (SE)	C-Reactive Protein Levels *n* =13,132 Coef (SE)	Allostatic Load *n* =12,672 Coef (SE)
Acadamic Achievement						
GPA	-0.14 (0.20)	-0.27 (0.29)	-0.37 (0.16)*	-0.01 (0.01)	-0.04 (0.03)	-0.03 (0.03)
College completion	-0.79 (0.34)*	-0.64 (0.36)+	-1.31 (0.21)**	-0.02 (0.02)	-0.20 (0.04)**	-0.15 (0.04)**
Parental education	-0.03 (0.05)	-0.04 (0.08)	-0.11 (0.04)**	-0.01 (0.00)	-0.01 (0.01)	-0.02 (0.01)*
Interactions						
GPA X Parental education	-0.02 (0.07)	-0.03 (0.09)	-0.03 (0.06)	0.00 (0.00)	0.00 (0.01)	-0.01 (0.01)
College X Parental education	-0.13 (0.12)	-0.18 (0.21)	-0.14 (0.12)	0.00 (0.01)	-0.02 (0.02)	-0.02 (0.02)
Individual & Family Covariates						
Asian	1.67 (0.93)+	1.04 (1.45)	-1.00 (0.65)	-0.03 (0.05)	-0.29 (0.10)**	-0.13 (0.09)
Black	0.42 (0.58)	1.07 (0.76)	0.78 (0.50)	0.11 (0.03)**	-0.01 (0.07)	0.13 (0.08)
Latino	-0.28 (0.62)	0.04 (0.76)	0.47 (0.44)	0.06 (0.04)	0.16 (0.07)*	0.09 (0.07)
Multiracial & other	0.99 (0.45)*	1.02 (0.61)+	0.80 (0.49)+	0.01 (0.03)	0.04 (0.08)	0.16 (0.08)*
Age	0.04 (0.01)**	0.02 (0.01)*	0.01 (0.01)+	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)*
Male	4.23 (0.24)**	9.33 (0.32)**	-0.12 (0.23)	-0.14 (0.01)**	-0.51 (0.03)**	0.23 (0.05)**
Low Birthweight	0.39 (0.50)	0.07 (0.68)	-0.58 (0.41)	0.03 (0.03)	0.00 (0.07)	0.02 (0.07)
Poor prior health	1.21 (0.50)*	2.27 (0.60)**	2.68 (0.39)**	0.05 (0.03)+	0.28 (0.09)**	0.24 (0.08)**
Pregnancy (at wave 4)	-- --	-- --	-- --	-0.11 (0.04)**	0.75 (0.06)**	-- --
Parent single	0.78 (0.67)	0.45 (0.89)	0.32 (0.52)	0.04 (0.04)	0.03 (0.08)	0.06 (0.09)
Parent divorced/separated	0.22 (0.35)	-0.14 (0.47)	-0.01 (0.27)	-0.01 (0.02)	-0.01 (0.04)	-0.01 (0.05)
School Covariates						
School avg GPA	0.68 (0.78)	1.40 (1.07)	0.60 (0.51)	0.01 (0.04)	-0.01 (0.11)	0.08 (0.10)
School avg college completion	0.48 (1.81)	-0.56 (2.42)	-2.48 (1.51)	-0.07 (0.09)	-0.21 (0.27)	-0.36 (0.15)*
School avg parental education	-0.47 (0.30)	-0.25 (0.40)	0.03 (0.23)	0.00 (0.02)	-0.01 (0.05)	-0.09 (0.12)
School percent Asian	-2.07 (2.20)	-3.62 (3.97)	-1.79 (1.83)	0.26 (0.19)	-0.14 (0.39)	-0.04 (0.29)
School percent Black	-0.35 (1.05)	0.56 (1.56)	1.83 (0.66)**	0.09 (0.04)*	0.21 (0.11)+	0.13 (0.11)
School percent Latino	-2.86 (2.34)	0.57 (3.11)	5.21 (1.50)**	-0.24 (0.14)+	0.45 (0.31)	0.11 (0.25)
Small school	0.00 (0.35)	-0.03 (0.50)	0.37 (0.24)	-0.01 (0.02)	-0.01 (0.05)	0.01 (0.04)
Large school	-0.14 (0.38)	-0.33 (0.59)	-0.31 (0.22)	0.00 (0.02)	-0.07 (0.04)+	-0.04 (0.04)
School has HS grades	0.72 (0.39)+	0.76 (0.54)	0.75 (0.26)**	0.03 (0.02)	0.10 (0.06)+	0.14 (0.05)**
Urban	-0.45 (0.35)	-1.06 (0.51)*	-0.48 (0.24)*	0.01 (0.02)	-0.02 (0.04)	-0.10 (0.04)**
Rural	-0.17 (0.44)	0.05 (0.49)	0.40 (0.31)	0.01 (0.02)	0.07 (0.06)	0.04 (0.05)
West	-0.16 (0.52)	0.00 (0.86)	-0.03 (0.31)	0.03 (0.02)	-0.07 (0.06)	-0.04 (0.05)
Midwest	-0.12 (0.32)	0.35 (0.46)	-0.06 (0.24)	0.04 (0.02)*	0.01 (0.04)	0.04 (0.04)
Northeast	-0.84 (0.39)*	-0.64 (0.56)	-0.19 (0.28)	0.04 (0.02)+	-0.01 (0.05)	-0.01 (0.04)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01.

Table B.16. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analyses Considering School-wide Socioeconomic Status as a Moderator of Link between Achievement, Parental Education, and Physiological Health Outcomes

	Diastolic Blood Pressure *n* =14,296 Coef (SE)	Systolic Blood Pressure *n* =14,296 Coef (SE)	Body Mass Index *n* =14,564 Coef (SE)	Epstein-Barr Virus Antibodies *n* =13,132 Coef (SE)	C-Reactive Protein Levels *n* =13,132 Coef (SE)	Allostatic Load *n* =12,672 Coef (SE)
Acadamic Achievement						
GPA	-0.25 (0.21)	-0.41 (0.30)	-0.40 (0.16)*	-0.01 (0.01)	-0.04 (0.03)	-0.04 (0.03)
College completion	-0.75 (0.34)*	-0.58 (0.36)	-1.28 (0.21)*	-0.02 (0.02)	-0.19 (0.04)**	-0.14 (0.04)*
Parental education	-0.03 (0.05)	-0.04 (0.08)	-0.10 (0.04)*	-0.01 (0.00)	-0.01 (0.01)	-0.02 (0.01)*
School avg. parental education	-0.44 (0.32)	-0.23 (0.42)	0.07 (0.24)	0.00 (0.02)	-0.01 (0.05)	-0.15 (0.14)
Two Way Interactions						
GPA X Parental education	0.03 (0.07)	0.02 (0.09)	-0.02 (0.06)	0.00 (0.00)	0.00 (0.01)	0.00 (0.01)
College X Parental education	-0.14 (0.13)	-0.20 (0.22)	-0.15 (0.13)	0.00 (0.01)	-0.02 (0.02)	-0.02 (0.02)
Parental education X School parental edu	-0.05 (0.06)	-0.04 (0.08)	-0.01 (0.05)	0.00 (0.00)	0.00 (0.01)	0.00 (0.01)
GPA X School income	-0.29 (0.21)	-0.31 (0.28)	-0.10 (0.16)	0.00 (0.01)	0.01 (0.03)	-0.02 (0.03)
College X School income	0.42 (0.33)	0.51 (0.45)	0.22 (0.27)	-0.02 (0.02)	0.00 (0.05)	0.04 (0.05)
Three Way Interactions						
GPA X Parental edu X School parental edu	0.16 (0.07)*	0.20 (0.10)*	0.05 (0.05)	0.00 (0.01)	0.01 (0.01)	0.01 (0.01)
College X Parental edu X School parental edu	-0.09 (0.14)	-0.15 (0.19)	-0.10 (0.10)	0.00 (0.01)	-0.01 (0.02)	-0.02 (0.02)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01. All covariates listed in Tables B.14 and B.15 are included in these models.

Table B.17. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analyses Predicting Physiological Health Outcomes, with Highest Parental Job Prestige

	Diastolic Blood Pressure *n* =14,296	Systolic Blood Pressure *n* =14,296	Body Mass Index *n* =14,564	Epstein-Barr Virus Antibodies *n* =13,132	C-Reactive Protein Levels *n* =13,132	Allostatic Load *n* =12,672
	Coef (SE)	Coef (SE)	Coef (SE)	Coef (SE)	Coef (SE)	Coef (SE)
Acadamic Achievement						
GPA	-0.13 (0.20)	-0.28 (0.29)	-0.40 (0.16)*	-0.01 (0.01)	-0.04 (0.03)	-0.04 (0.03)
College completion	-0.86 (0.32)**	-0.74 (0.35)*	-1.44 (0.19)**	-0.03 (0.02)+	-0.21 (0.04)**	-0.17 (0.04)**
Parental job prestige	-0.01 (0.01)	-0.01 (0.02)	-0.01 (0.01)	-0.01 (0.00)+	-0.01 (0.00)	-0.01 (0.00)*
Race/Ethnicity						
Asian	1.67 (0.94)+	1.04 (1.47)	-1.03 (0.66)	-0.03 (0.05)	-0.30 (0.10)**	-0.14 (0.09)
Black	0.42 (0.59)	1.07 (0.76)	0.79 (0.50)	0.11 (0.03)**	-0.01 (0.07)	0.13 (0.08)
Latino	-0.30 (0.64)	0.03 (0.78)	0.55 (0.44)	0.06 (0.04)	0.15 (0.07)*	0.10 (0.07)
Multiracial & other	0.99 (0.45)*	1.03 (0.60)+	0.83 (0.49)+	0.01 (0.03)	0.04 (0.07)	0.16 (0.08)*
Individual & Family Covariates						
Age	0.04 (0.01)**	0.02 (0.01)*	0.01 (0.01)+	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)*
Male	4.24 (0.24)**	9.34 (0.32)**	-0.14 (0.23)	-0.14 (0.01)**	-0.50 (0.03)**	0.23 (0.04)**
Low Birthweight	0.40 (0.50)	0.07 (0.68)	-0.58 (0.41)	0.03 (0.03)	0.00 (0.07)	0.02 (0.07)
Poor prior health	1.20 (0.50)*	2.26 (0.60)**	2.67 (0.39)**	0.05 (0.03)+	0.28 (0.09)**	0.25 (0.08)**
Pregnancy (at wave 4)	-- --	-- --	-- --	-0.11 (0.04)**	0.75 (0.06)**	-- --
Parent single	0.77 (0.67)	0.44 (0.89)	0.34 (0.52)	0.04 (0.04)	0.03 (0.08)	0.06 (0.09)
Parent divorced/separated	0.23 (0.35)	-0.13 (0.48)	0.02 (0.27)	-0.01 (0.02)	-0.01 (0.04)	-0.01 (0.05)
School Covariates						
School avg GPA	0.59 (0.78)	1.42 (1.06)	0.69 (0.51)	0.01 (0.04)	0.00 (0.11)	0.08 (0.10)
School avg college completion	-0.35 (1.69)	-0.38 (2.35)	-1.84 (1.42)	-0.11 (0.09)	-0.07 (0.23)	-0.39 (0.15)*
School avg parental job prestige	-0.08 (0.08)	-0.09 (0.10)	-0.05 (0.06)	0.00 (0.00)	-0.01 (0.01)	-0.10 (0.12)
School percent Asian	-2.26 (2.23)	-3.90 (3.99)	-1.93 (1.94)	0.27 (0.18)	-0.18 (0.40)	-0.05 (0.3)
School percent Black	-0.43 (1.07)	0.45 (1.61)	1.73 (0.69)*	0.09 (0.04)*	0.19 (0.11)+	0.13 (0.11)
School percent Latino	-1.98 (2.18)	0.63 (2.92)	4.67 (1.49)**	-0.22 (0.14)	0.37 (0.30)	0.11 (0.26)
Small school	-0.05 (0.35)	-0.07 (0.49)	0.36 (0.24)	-0.01 (0.02)	-0.01 (0.05)	0.00 (0.04)
Large school	-0.18 (0.37)	-0.33 (0.58)	-0.28 (0.22)	0.00 (0.02)	-0.07 (0.04)	-0.04 (0.04)
School has HS grades	0.74 (0.39)+	0.79 (0.54)	0.76 (0.26)**	0.03 (0.02)	0.10 (0.06)+	0.14 (0.05)**
Urban	-0.40 (0.36)	-0.99 (0.53)+	-0.43 (0.25)+	0.01 (0.02)	0.00 (0.04)	-0.09 (0.04)*
Rural	-0.11 (0.44)	0.06 (0.50)	0.38 (0.30)	0.01 (0.02)	0.07 (0.06)	0.04 (0.05)
West	-0.23 (0.51)	0.01 (0.85)	0.02 (0.31)	0.03 (0.02)	-0.06 (0.06)	-0.04 (0.05)
Midwest	-0.18 (0.34)	0.29 (0.48)	-0.10 (0.24)	0.04 (0.02)*	0.00 (0.04)	0.03 (0.04)
Northeast	-0.83 (0.39)*	-0.65 (0.56)	-0.22 (0.27)	0.04 (0.02)*	-0.02 (0.05)	-0.01 (0.04)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01.

Table B.18. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analyses Considering Variations in Links between Achievement and Physiological Health Outcomes across the Socioeconomic Spectrum, with Highest Parental Job Prestige

	Diastolic Blood Pressure *n* =14,296 Coef (SE)	Systolic Blood Pressure *n* =14,296 Coef (SE)	Body Mass Index *n* =14,564 Coef (SE)	Epstein-Barr Virus Antibodies *n* =13,132 Coef (SE)	C-Reactive Protein Levels *n* =13,132 Coef (SE)	Allostatic Load *n* =12,672 Coef (SE)
Acadamic Achievement						
GPA	-0.14 (0.20)	-0.28 (0.29)	-0.41 (0.16)*	-0.01 (0.01)	-0.04 (0.03)	-0.04 (0.03)
College completion	-0.86 (0.32)**	-0.76 (0.35)*	-1.42 (0.20)**	-0.02 (0.02)	-0.20 (0.04)**	-0.16 (0.04)**
Parental job prestige	-0.01 (0.01)	0.00 (0.02)	-0.01 (0.01)	-0.01 (0.00)+	0.00 (0.02)*	-0.01 (0.00)*
Interactions						
GPA X Parental job prestige	-0.02 (0.02)	-0.01 (0.02)	0.00 (0.02)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
College X Parental job	0.01 (0.03)	0.02 (0.05)	-0.02 (0.03)	0.00 (0.01)	-0.01 (0.00)	0.00 (0.01)
Individual & Family Covariates						
Asian	1.66 (0.94)+	1.04 (1.47)	-1.04 (0.66)	-0.03 (0.05)	-0.30 (0.10)**	-0.14 (0.09)
Black	0.42 (0.59)	1.07 (0.76)	0.79 (0.50)	0.11 (0.03)**	-0.01 (0.07)	0.13 (0.08)
Latino	-0.30 (0.63)	0.03 (0.78)	0.56 (0.44)	0.06 (0.04)	0.16 (0.07)*	0.10 (0.07)
Multiracial & other	0.99 (0.45)*	1.02 (0.60)+	0.83 (0.48)+	0.01 (0.03)	0.04 (0.07)	0.16 (0.08)*
Age	0.04 (0.01)**	0.02 (0.01)*	0.01 (0.01)+	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)*
Male	4.24 (0.24)**	9.34 (0.31)**	-0.14 (0.23)	-0.14 (0.01)**	-0.50 (0.03)**	0.23 (0.04)**
Low Birthweight	0.39 (0.50)	0.07 (0.68)	-0.58 (0.41)	0.03 (0.03)	0.00 (0.07)	0.02 (0.07)
Poor prior health	1.20 (0.50)*	2.26 (0.60)**	2.67 (0.39)**	0.05 (0.03)+	0.28 (0.09)**	0.24 (0.08)**
Pregnancy (at wave 4)	-- --	-- --	-- --	-0.11 (0.04)**	0.75 (0.06)**	-- --
Parent single	0.77 (0.67)	0.45 (0.89)	0.34 (0.52)	0.04 (0.04)	0.03 (0.08)	0.06 (0.09)
Parent divorced/separated	0.23 (0.35)	-0.13 (0.47)	0.01 (0.27)	-0.01 (0.02)	-0.01 (0.04)	-0.01 (0.05)
School Covariates						
School avg GPA	0.59 (0.78)	1.43 (1.06)	0.67 (0.51)	0.01 (0.04)	-0.01 (0.11)	0.08 (0.10)
School avg college completion	-0.38 (1.70)	-0.40 (2.35)	-1.85 (1.42)	-0.11 (0.09)	-0.07 (0.24)	-0.38 (0.15)*
School avg parental job prestige	-0.08 (0.08)	-0.09 (0.10)	-0.05 (0.06)	0.00 (0.00)	-0.01 (0.01)	-0.09 (0.12)
School percent Asian	-2.30 (2.22)	-3.97 (3.96)	-1.89 (1.95)	0.27 (0.18)	-0.17 (0.40)	-0.05 (0.29)
School percent Black	-0.42 (1.07)	0.46 (1.60)	1.72 (0.68)*	0.09 (0.04)*	0.18 (0.11)+	0.12 (0.11)
School percent Latino	-1.97 (2.18)	0.63 (2.92)	4.69 (1.49)**	-0.22 (0.14)	0.38 (0.30)	0.11 (0.25)
Small school	-0.05 (0.35)	-0.07 (0.49)	0.36 (0.24)	-0.01 (0.02)	-0.01 (0.05)	0.00 (0.04)
Large school	-0.19 (0.37)	-0.33 (0.59)	-0.29 (0.22)	0.00 (0.02)	-0.07 (0.04)	-0.04 (0.04)
School has HS grades	0.74 (0.39)+	0.79 (0.54)	0.75 (0.26)**	0.03 (0.02)	0.10 (0.06)+	0.14 (0.05)**
Urban	-0.40 (0.36)	-0.99 (0.53)+	-0.43 (0.25)+	0.01 (0.02)	0.00 (0.04)	-0.09 (0.04)*
Rural	-0.11 (0.45)	0.05 (0.50)	0.38 (0.31)	0.01 (0.02)	0.07 (0.06)	0.04 (0.05)
West	-0.23 (0.50)	0.02 (0.84)	0.01 (0.31)	0.03 (0.02)	-0.06 (0.06)	-0.04 (0.05)
Midwest	-0.18 (0.34)	0.29 (0.48)	-0.10 (0.24)	0.04 (0.02)*	0.00 (0.05)	0.03 (0.04)
Northeast	-0.83 (0.39)*	-0.65 (0.56)	-0.23 (0.28)	0.04 (0.02)*	-0.02 (0.05)	-0.01 (0.05)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01.

Table B.19. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analyses Considering School-wide Socioeconomic Status as a Moderator of Link between Achievement, Parental Job Prestige, and Physiological Health Outcomes

	Diastolic Blood Pressure *n* =14,296 Coef (SE)	Systolic Blood Pressure *n* =14,296 Coef (SE)	Body Mass Index *n* =14,564 Coef (SE)	Epstein-Barr Virus Antibodies *n* =13,132 Coef (SE)	C-Reactive Protein Levels *n* =13,132 Coef (SE)	Allostatic Load *n* =12,672 Coef (SE)
Acadamic Achievement						
GPA	-0.20 (0.20)	-0.36 (0.30)	-0.45 (0.16)**	-0.01 (0.01)	-0.04 (0.03)	-0.04 (0.03)
College completion	-0.85 (0.33)**	-0.70 (0.35)*	-1.38 (0.20)*	-0.02 (0.02)	-0.20 (0.04)**	-0.16 (0.04)**
Parental job prestige	-0.01 (0.02)	0.00 (0.02)	-0.01 (0.01)	-0.01 (0.00)+	0.00 (0.00)	-0.01 (0.00)+
School avg. parental job prestige	-0.08 (0.09)	-0.09 (0.11)	-0.04 (0.07)	0.00 (0.00)	-0.01 (0.01)	-0.15 (0.14)
Two Way Interactions						
GPA X Parental job prestige	-0.01 (0.02)	-0.01 (0.02)	0.00 (0.02)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
College X Parental job prestige	0.01 (0.03)	0.02 (0.05)	-0.01 (0.03)	0.00 (0.01)	0.00 (0.00)	0.00 (0.01)
Par. job prestige X School par. job prestige	0.00 (0.00)	0.00 (0.01)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
GPA X School income	-0.07 (0.07)	-0.06 (0.10)	-0.04 (0.05)	0.00 (0.01)	0.01 (0.01)	0.00 (0.01)
College X School income	0.04 (0.09)	0.08 (0.13)	0.02 (0.07)	-0.02 (0.02)	-0.01 (0.01)	0.00 (0.01)
Three Way Interactions						
GPA X Par. job prestige X School par. job prestige	0.01 (0.01)+	0.01 (0.01)	0.01 (0.00)	0.00 (0.01)	0.00 (0.00)	0.00 (0.00)
College X Par. job prestige X School par. job prestige	0.00 (0.01)	-0.01 (0.01)	-0.01 (0.01)	0.00 (0.01)	0.00 (0.00)	0.00 (0.00)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01. All covariates listed in Tables B.17 and B.18 are included in these models.

Considering potential nonlinearities across the socioeconomic spectrum. In addition to considering discrete subcomponents of socioeconomic status, a variety of models considered the potential for both linear and nonlinear associations between family socioeconomic status and physiological health, as well as between achievement and physiological health across the socioeconomic spectrum.

Linear and quadratic SES terms. The first set of these models, reported in Tables B.20 through B.22, incorporated both a linear and a quadratic socioeconomic status term in order to address the potential of non-linearity. No evidence of nonlinear effects, either in associations between SES and later physiological health or in interactive models, emerged throughout these models.

Table B.20. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analyses Predicting Physiological Health Outcomes, with Nonlinear Family SES

	Diastolic Blood Pressure *n* =14,296	Systolic Blood Pressure *n* =14,296	Body Mass Index *n* =14,564	Epstein-Barr Virus Antibodies *n* =13,132	C-Reactive Protein Levels *n* =13,132	Allostatic Load *n* =12,672
	Coef (SE)	Coef (SE)	Coef (SE)	Coef (SE)	Coef (SE)	Coef (SE)
Acadamic Achievement						
GPA	-0.22 (0.24)	-0.25 (0.29)	-0.43 (0.19)*	-0.01 (0.01)	-0.03 (0.03)	-0.03 (0.03)
College completion	-0.71 (0.41)+	-0.71 (0.35)*	-1.28 (0.23)*	-0.02 (0.02)	-0.18 (0.04)**	-0.16 (0.04)**
Family SES	-0.33 (0.30)	-0.29 (0.36)	-0.40 (0.19)*	-0.03 (0.02)+	-0.09 (0.04)*	-0.09 (0.03)**
Quadratic Family SES	0.04 (0.11)	0.13 (0.13)	-0.01 (0.06)	0.00 (0.01)	0.01 (0.01)	0.01 (0.01)
Race/Ethnicity						
Asian	1.47 (0.92)	0.45 (1.41)	-1.20 (0.56)*	-0.05 (0.05)	-0.33 (0.09)**	-0.14 (0.09)
Black	0.32 (0.72)	1.11 (0.76)	0.57 (0.61)	0.09 (0.03)**	-0.03 (0.08)	0.12 (0.08)
Latino	-0.69 (0.61)	-0.51 (0.65)	0.18 (0.48)	0.04 (0.05)	0.09 (0.08)	0.08 (0.07)
Multiracial & other	1.24 (0.58)*	0.78 (0.63)	0.97 (0.65)	-0.02 (0.03)	0.02 (0.10)	0.16 (0.08)*
Individual & Family Covariates						
Age	0.03 (0.01)**	0.02 (0.01)*	0.00 (0.01)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)*
Male	4.26 (0.30)**	9.36 (0.32)	-0.14 (0.28)	-0.14 (0.02)**	-0.48 (0.04)**	0.23 (0.04)**
Low Birthweight	0.09 (0.61)	0.07 (0.68)	-0.53 (0.53)	0.02 (0.04)	0.00 (0.09)	0.02 (0.07)
Poor prior health	1.13 (0.60)+	2.27 (0.60)**	2.71 (0.48)**	0.06 (0.04)	0.27 (0.11)*	0.24 (0.08)**
Pregnancy (at wave 4)	-- --	-- --	-- --	-0.14 (0.04)**	0.70 (0.07)**	-- --
Parent single	0.73 (0.88)	0.41 (0.90)	0.48 (0.68)	0.03 (0.04)	0.08 (0.10)	0.05 (0.09)
Parent divorced/separated	0.27 (0.41)	-0.17 (0.48)	0.05 (0.34)	-0.01 (0.03)	-0.01 (0.05)	-0.02 (0.05)
School Covariates						
School avg GPA	0.90 (1.00)	1.41 (1.06)	0.61 (0.61)	0.04 (0.05)	0.07 (0.12)	0.08 (0.10)
School avg college completion	-0.72 (2.93)	-1.42 (2.67)	-0.29 (2.02)	-0.04 (0.13)	0.19 (0.29)	-0.33 (0.15)*
School avg family SES	-0.90 (1.36)	-0.30 (1.34)	-0.97 (1.02)	-0.01 (0.06)	-0.25 (0.14)+	-0.10 (0.12)
School percent Asian	-3.61 (2.99)	-4.03 (4.00)	-2.78 (2.09)	0.20 (0.18)	-0.18 (0.31)	-0.06 (0.29)
School percent Black	0.47 (1.45)	0.48 (1.63)	1.79 (0.96)+	0.10 (0.06)+	0.29 (0.13)*	0.12 (0.11)
School percent Latino	-4.67 (2.45)+	-0.01 (3.02)	4.81 (1.59)**	-0.21 (0.16)	0.23 (0.24)	0.10 (0.25)
Small school	0.14 (0.56)	-0.04 (0.50)	0.66 (0.35)+	-0.01 (0.03)	0.08 (0.06)	0.01 (0.04)
Large school	-0.06 (0.41)	-0.35 (0.58)	-0.37 (0.24)	0.00 (0.02)	-0.03 (0.04)	-0.04 (0.04)
School has HS grades	-1.05 (1.03)	0.81 (0.53)	1.07 (1.20)	0.09 (0.05)+	0.16 (0.14)	0.14 (0.05)**
Urban	-0.47 (0.45)	-1.08 (0.51)*	-0.46 (0.26)+	0.01 (0.02)	-0.02 (0.04)	-0.10 (0.04)**
Rural	0.06 (0.52)	0.05 (0.50)	0.38 (0.34)	0.01 (0.02)	0.04 (0.05)	0.03 (0.05)
West	0.46 (0.74)	-0.01 (0.85)	0.44 (0.40)	0.05 (0.03)	-0.03 (0.07)	-0.03 (0.05)
Midwest	-0.29 (0.40)	0.36 (0.47)	0.06 (0.25)	0.06 (0.02)**	-0.02 (0.04)	0.03 (0.04)
Northeast	-0.47 (0.45)	-0.64 (0.56)	-0.09 (0.30)	0.06 (0.02)*	0.01 (0.05)	-0.01 (0.04)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01.

Table B.21. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analyses Considering Variations in Link between Achievement and Physiological Health Outcomes across the Socioeconomic Spectrum, with Nonlinear Family SES

	Diastolic Blood Pressure *n* =14,296 Coef (SE)	Systolic Blood Pressure *n* =14,296 Coef (SE)	Body Mass Index *n* =14,564 Coef (SE)	Epstein-Barr Virus Antibodies *n* =13,132 Coef (SE)	C-Reactive Protein Levels *n* =13,132 Coef (SE)	Allostatic Load *n* =12,672 Coef (SE)
Acadamic Achievement						
GPA	-0.35 (0.25)	-0.39 (0.30)	-0.43 (0.19)*	-0.02 (0.02)	-0.03 (0.04)	-0.04 (0.03)
College completion	-0.54 (0.44)	-0.52 (0.37)	-1.22 (0.23)*	-0.02 (0.02)	-0.16 (0.04)**	-0.15 (0.04)**
Family SES	-0.37 (0.30)	-0.33 (0.39)	-0.44 (0.19)*	-0.04 (0.02)*	-0.09 (0.04)*	-0.10 (0.04)**
Quadratic Family SES	0.02 (0.13)	0.09 (0.15)	0.04 (0.09)	0.00 (0.01)	0.02 (0.02)	0.02 (0.01)
Interactions						
GPA X Family SES	-0.32 (0.34)	-0.28 (0.36)	0.01 (0.31)	-0.01 (0.02)	0.00 (0.05)	-0.03 (0.04)
GPA X Quadratic Family SES	0.24 (0.16)	0.25 (0.18)	-0.02 (0.11)	0.01 (0.01)	0.00 (0.02)	-0.08 (0.09)
College X Family SES	-0.07 (0.64)	-0.22 (0.82)	-0.74 (0.64)	-0.03 (0.04)	-0.10 (0.08)	0.01 (0.02)
College X Quadratic Family SES	-0.27 (0.22)	-0.26 (0.30)	0.05 (0.18)	0.00 (0.01)	-0.01 (0.03)	0.01 (0.03)
Individual & Family Covariates						
Asian	1.46 (0.92)	0.41 (1.41)	-1.22 (0.56)*	-0.05 (0.05)	-0.33 (0.09)**	-0.14 (0.09)
Black	0.31 (0.72)	1.09 (0.77)	0.56 (0.61)	0.09 (0.03)**	-0.03 (0.08)	-0.14 (0.09)
Latino	-0.67 (0.61)	-0.49 (0.64)	0.19 (0.49)	0.04 (0.05)	0.09 (0.08)	0.12 (0.08)
Multiracial & other	1.24 (0.58)*	0.77 (0.62)	0.96 (0.64)	-0.02 (0.04)	0.02 (0.1)	0.08 (0.07)
Age	0.03 (0.01)**	0.02 (0.01)*	0.00 (0.01)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)*
Male	4.25 (0.30)**	9.36 (0.32)**	-0.15 (0.29)	-0.14 (0.02)**	-0.48 (0.04)**	0.23 (0.04)**
Low Birthweight	0.09 (0.61)	0.07 (0.68)	-0.53 (0.52)	0.02 (0.04)	0.00 (0.09)	0.02 (0.07)
Poor prior health	1.09 (0.61)+	2.24 (0.61)**	2.72 (0.47)**	0.06 (0.04)	0.27 (0.11)*	0.24 (0.08)**
Pregnancy (at wave 4)	-- --	-- --	-- --	-0.14 (0.04)**	0.70 (0.07)**	-- --
Parent single	0.74 (0.88)	0.42 (0.90)	0.48 (0.68)	0.03 (0.04)	0.08 (0.10)	0.05 (0.09)
Parent divorced/separated	0.25 (0.41)	-0.19 (0.48)	0.03 (0.34)	-0.01 (0.03)	-0.01 (0.05)	-0.02 (0.05)
School Covariates						
School avg GPA	0.81 (0.99)	1.31 (1.06)	0.59 (0.61)	0.04 (0.05)	0.07 (0.12)	0.07 (0.10)
School avg college completion	-0.85 (2.96)	-1.47 (2.67)	-0.39 (2.03)	-0.05 (0.13)	0.18 (0.29)	-0.31 (0.15)*
School avg family SES	-0.63 (1.38)	-0.06 (1.34)	-0.78 (1.04)	0.00 (0.06)	-0.21 (0.15)	-0.09 (0.12)
School percent Asian	-3.55 (3.04)	-3.91 (3.99)	-2.69 (2.12)	0.20 (0.18)	-0.17 (0.31)	-0.06 (0.29)
School percent Black	0.50 (1.46)	0.50 (1.63)	1.80 (0.95)+	0.11 (0.06)+	0.29 (0.12)*	0.12 (0.11)
School percent Latino	-4.45 (2.45)+	0.18 (2.00)	4.93 (1.59)**	-0.19 (0.16)	0.25 (0.24)	0.10 (0.25)
Small school	0.15 (0.56)	-0.02 (0.50)	0.66 (0.35)+	-0.01 (0.03)	0.08 (0.06)	0.01 (0.04)
Large school	-0.09 (0.41)	-0.38 (0.58)	-0.38 (0.24)	0.00 (0.02)	-0.04 (0.04)	-0.04 (0.04)
School has HS grades	-1.07 (1.02)	0.80 (0.53)	1.07 (1.17)	0.09 (0.05)+	0.15 (0.13)	0.14 (0.05)**
Urban	-0.47 (0.45)	-1.07 (0.51)*	-0.47 (0.26)+	0.01 (0.02)	-0.02 (0.04)	-0.10 (0.04)**
Rural	0.07 (0.52)	0.07 (0.50)	0.40 (0.35)	0.01 (0.02)	0.05 (0.05)	0.03 (0.05)
West	0.43 (0.74)	-0.05 (0.85)	0.39 (0.41)	0.05 (0.03)	-0.04 (0.07)	-0.03 (0.05)
Midwest	-0.30 (0.40)	0.35 (0.47)	0.05 (0.25)	0.05 (0.02)**	-0.02 (0.04)	0.03 (0.04)
Northeast	-0.47 (0.45)	-0.64 (0.56)	-0.11 (0.30)	0.05 (0.02)*	0.01 (0.05)	-0.01 (0.04)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01.

Table B.22. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analyses Considering School-wide Socioeconomic Status as a Moderator of Link between Achievement, Family SES and Nonlinear SES, and Physiological Health Outcomes

	Diastolic Blood Pressure *n* =14,296 Coef (SE)	Systolic Blood Pressure *n* =14,296 Coef (SE)	Body Mass Index *n* =14,564 Coef (SE)	Epstein-Barr Virus Antibodies *n* =13,132 Coef (SE)	C-Reactive Protein Levels *n* =13,132 Coef (SE)	Allostatic Load *n* =12,672 Coef (SE)
Acadamic Achievement						
GPA	-0.40 (0.25)	-0.49 (0.31)	-0.45 (0.19)*	-0.02 (0.02)	-0.03 (0.04)	-0.04 (0.03)
College completion	-0.66 (0.49)	-0.62 (0.39)	-1.20 (0.24)**	-0.01 (0.02)	-0.15 (0.05)**	-0.15 (0.04)*
Family SES	-0.45 (0.31)	-0.35 (0.41)	-0.44 (0.21)*	-0.04 (0.02)+	-0.09 (0.04)*	-0.10 (0.04)*
Quadratic Family SES	0.22 (0.16)	0.26 (0.20)	0.10 (0.14)	-0.01 (0.01)	0.02 (0.02)	0.03 (0.02)
School SES	-0.79 (1.58)	0.08 (1.64)	-0.71 (1.14)	-0.02 (0.07)	-0.24 (0.17)	-0.15 (0.14)
Two Way Interactions						
GPA X Family SES	-0.28 (0.35)	-0.17 (0.38)	0.02 (0.33)	-0.01 (0.02)	-0.01 (0.05)	-0.02 (0.04)
GPA X Quadratic Family SES	0.20 (0.18)	0.14 (0.21)	-0.03 (0.13)	0.02 (0.01)	0.00 (0.02)	-0.09 (0.10)
College X Family SES	-0.19 (0.69)	-0.50 (0.88)	-0.78 (0.70)	-0.03 (0.05)	-0.11 (0.09)	0.00 (0.02)
College X Quadratic Family SES	-0.03 (0.40)	0.13 (0.46)	0.10 (0.35)	-0.01 (0.02)	-0.03 (0.06)	0.03 (0.05)
Family SES X School SES	-0.57 (1.06)	-0.12 (1.02)	-0.27 (0.63)	0.03 (0.06)	0.03 (0.13)	-0.02 (0.09)
Quadratic Family SES X School SES	0.19 (0.37)	-0.26 (0.41)	0.16 (0.27)	0.02 (0.02)	-0.02 (0.05)	0.03 (0.18)
GPA X School SES	-0.77 (0.87)	-0.65 (0.96)	-0.10 (0.64)	0.01 (0.05)	0.03 (0.11)	-0.05 (0.09)
College X School SES	1.71 (1.42)	1.58 (1.63)	1.26 (1.10)	-0.02 (0.07)	0.04 (0.20)	0.03 (0.17)
Three Way Interactions						
GPA X Family SES X School SES	1.14 (1.04)	2.42 (1.20)*	0.57 (0.71)	0.02 (0.07)	-0.04 (0.13)	0.18 (0.11)
GPA X Quadratic Family SES X School SES	0.04 (0.29)	-0.36 (0.35)	-0.05 (0.18)	-0.01 (0.02)	0.05 (0.04)	-0.04 (0.03)
College X Family SES X School SES	0.41 (1.83)	-1.73 (1.98)	-1.25 (1.16)	-0.01 (0.10)	0.03 (0.21)	-0.09 (0.22)
College X Quadratic Family SES X School SES	-0.92 (0.73)	0.13 (0.81)	-0.17 (0.47)	0.00 (0.05)	0.00 (0.08)	0.00 (0.07)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01. All covariates listed in Tables B.20 and B.21 are included in these models.

Quintiles of socioeconomic status. As another means of capturing potential nonlinearities in links between socioeconomic resources and physiological health, families were grouped into socioeconomic quintiles, ranging from the least affluent 20% to the most affluent 20% of families in the sample. The results from these models are displayed in Tables B.23 and B.24. Results found only one link between quintile groups and physiological health outcomes, with membership in the highest quintile of socioeconomic status emerging as predictive of lower later allostatic load. No interactive effects emerged.

Table B.23. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analyses Predicting Physiological Health Outcomes, with Quintiles of Family Socioeconomic Status

	Diastolic Blood Pressure	Systolic Blood Pressure	Body Mass Index	Epstein-Barr Virus Antibodies	C-Reactive Protein Levels	Allostatic Load
	n =14,296	*n* =14,296	*n* =14,564	*n* =13,132	*n* =13,132	*n* =12,672
	Coef (SE)	Coef (SE)	Coef (SE)	Coef (SE)	Coef (SE)	Coef (SE)
Acadamic Achievement						
GPA	-0.12 (0.20)	-0.25 (0.29)	-0.37 (0.16)*	-0.01 (0.01)	-0.04 (0.03)	-0.03 (0.03)
College completion	-0.83 (0.32)*	-0.70 (0.35)*	-1.36 (0.19)**	-0.02 (0.02)	-0.20 (0.04)**	-0.15 (0.04)**
Family SES: Quintile 1	0.08 (0.48)	0.55 (0.67)	0.23 (0.36)	-0.01 (0.03)	0.05 (0.06)	0.04 (0.06)
Family SES: Quintile 2	0.03 (0.44)	0.58 (0.58)	0.40 (0.37)	0.01 (0.03)	0.02 (0.06)	0.01 (0.05)
Family SES: Quintile 4	0.02 (0.49)	0.07 (0.62)	0.02 (0.36)	-0.05 (0.03)	-0.04 (0.07)	-0.07 (0.06)
Family SES: Quintile 5	-0.44 (0.44)	0.02 (0.64)	-0.59 (0.35)+	-0.05 (0.03)	-0.09 (0.07)	-0.14 (0.06)*
Race/Ethnicity						
Asian	1.23 (0.89)	0.45 (1.41)	-1.14 (0.53)*	-0.04 (0.05)	-0.33 (0.08)**	-0.14 (0.09)
Black	0.45 (0.59)	1.12 (0.76)	0.78 (0.50)	0.11 (0.03)**	-0.01 (0.07)	0.12 (0.08)
Latino	-0.65 (0.52)	-0.48 (0.63)	0.40 (0.42)	0.05 (0.04)	0.12 (0.07)+	0.09 (0.07)
Multiracial & other	0.81 (0.48)+	0.78 (0.63)	0.76 (0.51)	0.01 (0.03)	0.02 (0.08)	0.16 (0.08)*
Individual & Family Covariates						
Age	0.04 (0.01)**	0.02 (0.01)*	0.01 (0.01)+	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)*
Male	4.25 (0.24)**	9.36 (0.32)**	-0.11 (0.23)	-0.14 (0.01)**	-0.54 (0.03)**	0.23 (0.04)**
Low Birthweight	0.39 (0.50)	0.07 (0.68)	-0.59 (0.41)	0.03 (0.03)	0.00 (0.07)	0.02 (0.07)
Poor prior health	1.22 (0.50)*	2.28 (0.61)**	2.69 (0.39)**	0.05 (0.03)+	0.27 (0.09)**	0.25 (0.08)**
Pregnancy (at wave 4)	-- --	-- --	-- --	-0.11 (0.04)**	0.70 (0.07)**	-- --
Parent single	0.76 (0.67)	0.41 (0.90)	0.30 (0.52)	0.04 (0.04)	0.02 (0.08)	0.05 (0.09)
Parent divorced/separated	0.21 (0.35)	-0.17 (0.48)	-0.04 (0.28)	-0.01 (0.02)	-0.02 (0.04)	-0.02 (0.05)
School Covariates						
School avg GPA	0.57 (0.78)	1.40 (1.07)	0.65 (0.50)	0.01 (0.04)	0.00 (0.11)	0.08 (0.10)
School avg college completion	-0.81 (1.91)	-1.42 (2.67)	-1.86 (1.58)	-0.06 (0.09)	-0.08 (0.25)	-0.33 (0.15)*
School avg family SES	-0.50 (0.92)	-0.23 (1.36)	-0.27 (0.77)	0.00 (0.05)	-0.11 (0.13)	-0.10 (0.12)
School percent Asian	-2.28 (2.22)	-4.07 (4.00)	-2.01 (1.89)	0.25 (0.18)	-0.25 (0.39)	-0.07 (0.3)
School percent Black	-0.44 (1.08)	0.49 (1.63)	1.76 (0.71)*	0.09 (0.04)*	0.18 (0.11)	0.13 (0.11)
School percent Latino	-2.60 (2.20)	0.06 (3.03)	4.61 (1.53)**	-0.26 (0.15)*	0.28 (0.28)	0.11 (0.25)
Small school	-0.02 (0.36)	-0.04 (0.50)	0.37 (0.24)	-0.01 (0.02)	-0.01 (0.05)	0.01 (0.04)
Large school	-0.22 (0.37)	-0.36 (0.58)	-0.29 (0.22)	0.00 (0.02)	-0.07 (0.04)+	-0.04 (0.04)
School has HS grades	0.75 (0.39)+	0.81 (0.54)	0.76 (0.26)**	0.03 (0.02)	0.11 (0.05)*	0.14 (0.05)**
Urban	-0.46 (0.36)	-1.07 (0.51)*	-0.46 (0.24)+	0.01 (0.02)	-0.01 (0.04)	-0.10 (0.04)*
Rural	-0.11 (0.44)	0.06 (0.50)	0.36 (0.31)	0.01 (0.02)	0.06 (0.06)	0.03 (0.05)
West	-0.24 (0.52)	-0.01 (0.86)	0.05 (0.32)	0.03 (0.02)	-0.03 (0.06)	-0.03 (0.05)
Midwest	-0.13 (0.33)	0.34 (0.47)	-0.07 (0.24)	0.04 (0.02)*	0.02 (0.04)	0.03 (0.04)
Northeast	-0.83 (0.39)*	-0.64 (0.56)	-0.22 (0.27)	0.04 (0.02)+	-0.01 (0.05)	-0.01 (0.04)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01. Quintiles range from 1 (least affluent) to 5 (most affluent).

Table B.24. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analyses Considering Variations in Link between Achievement and Physiological Health Outcomes across the Socioeconomic Spectrum, with Quintiles of Family Socioeconomic Status

	Diastolic Blood Pressure *n* =14,296 Coef (SE)	Systolic Blood Pressure *n* =14,296 Coef (SE)	Body Mass Index *n* =14,564 Coef (SE)	Epstein-Barr Virus Antibodies *n* =13,132 Coef (SE)	C-Reactive Protein Levels *n* =13,132 Coef (SE)	Allostatic Load *n* =12,672 Coef (SE)
Acadamic Achievement						
GPA	-0.13 (0.20)	-0.25 (0.29)	-0.36 (0.16)*	-0.01 (0.01)	-0.04 (0.03)	-0.03 (0.03)
College completion	-0.80 (0.33)*	-0.68 (0.38)+	-1.31 (0.21)**	-0.02 (0.02)	-0.20 (0.04)**	-0.15 (0.04)**
Family SES: Quintile 1	0.20 (0.53)	0.65 (0.76)	0.36 (0.43)	-0.01 (0.03)	0.05 (0.07)	0.06 (0.08)
Family SES: Quintile 2	0.03 (0.46)	0.61 (0.60)	0.34 (0.38)	0.02 (0.03)	0.02 (0.06)	0.02 (0.06)
Family SES: Quintile 4	0.04 (0.50)	0.10 (0.64)	-0.01 (0.37)	-0.05 (0.03)	-0.05 (0.06)	-0.07 (0.06)
Family SES: Quintile 5	-0.36 (0.47)	0.11 (0.68)	-0.52 (0.36)	-0.05 (0.03)	-0.07 (0.07)	-0.12 (0.06)+
Interactions						
GPA X Quintile 1	0.27 (0.61)	0.54 (0.88)	0.09 (0.55)	0.03 (0.04)	-0.02 (0.09)	0.00 (0.10)
GPA X Quintile 2	0.11 (0.60)	0.46 (0.79)	-0.27 (0.54)	0.03 (0.04)	-0.03 (0.08)	0.01 (0.10)
GPA X Quintile 4	-0.11 (0.57)	0.05 (0.80)	-0.08 (0.53)	0.01 (0.03)	0.05 (0.09)	-0.02 (0.09)
GPA X Quintile 5	-0.14 (0.57)	0.22 (0.89)	-0.17 (0.55)	0.02 (0.04)	-0.05 (0.09)	-0.05 (0.10)
College X Quintile 1	0.37 (1.11)	0.36 (1.71)	0.21 (1.09)	-0.02 (0.08)	-0.04 (0.17)	0.05 (0.20)
College X Quintile 2	-0.02 (0.93)	0.24 (1.41)	-0.44 (0.76)	0.07 (0.07)	-0.08 (0.15)	0.01 (0.16)
College X Quintile 4	0.21 (0.93)	0.73 (1.37)	-0.28 (0.72)	-0.05 (0.06)	-0.08 (0.14)	0.01 (0.12)
College X Quintile 5	-0.11 (0.97)	-0.31 (1.32)	-0.70 (0.64)	-0.01 (0.07)	-0.18 (0.12)	-0.07 (0.12)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01. All covariates listed in Table B.23 are included in these models.

Deciles of socioeconomic status. Tables B.25 and B.27 report the results from the final specification aimed at capturing potential nonlinearities across the socioeconomic spectrum, pulling out the top and bottom 10% of family SES compared to the referent, middle 80% of families. No evidence of significant associations between socioeconomic status and physiological health emerged in these models. Similarly to results of models considering linear SES, both linear and nonlinear SES terms, and those models demarcating families in quintiles of SES, no interactive effects emerged.

Table B.25. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analyses Predicting Physiological Health Outcomes, with Deciles of Family Socioeconomic Status at either end of the Spectrum

	Diastolic Blood Pressure *n* =14,296	Systolic Blood Pressure *n* =14,296	Body Mass Index *n* =14,564	Epstein-Barr Virus Antibodies *n* =13,132	C-Reactive Protein Levels *n* =13,132	Allostatic Load *n* =12,672
	Coef (SE)	Coef (SE)	Coef (SE)	Coef (SE)	Coef (SE)	Coef (SE)
Acadamic Achievement						
GPA	-0.25 (0.24)	-0.30 (0.29)	-0.46 (0.19)	-0.01 (0.01)	-0.04 (0.03)	-0.04 (0.03)
College completion	-0.75 (0.42)+	-0.80 (0.35)*	-1.33 (0.23)**	-0.02 (0.02)	-0.17 (0.04)**	-0.17 (0.04)**
Family SES: Bottom Decile	0.24 (0.68)	0.11 (0.72)	0.29 (0.57)	0.00 (0.04)	0.10 (0.09)	0.06 (0.07)
Family SES: Top Decile	-0.27 (0.54)	0.59 (0.82)	-0.41 (0.40)	-0.05 (0.04)	-0.10 (0.08)	-0.07 (0.06)
Race/Ethnicity						
Asian	1.49 (0.92)	0.47 (1.40)	-1.18 (0.57)*	-0.05 (0.05)	-0.33 (0.09)**	-0.14 (0.09)
Black	0.33 (0.72)	1.14 (0.76)	0.58 (0.62)	0.09 (0.03)**	-0.04 (0.08)	0.13 (0.08)
Latino	-0.60 (0.61)	-0.35 (0.64)	0.27 (0.48)	0.05 (0.05)	0.11 (0.07)	0.10 (0.07)
Multiracial & other	1.27 (0.58)*	0.83 (0.63)	1.00 (0.64)	-0.01 (0.03)	0.03 (0.09)	0.16 (0.08)*
Individual & Family Covariates						
Age	0.03 (0.01)**	0.02 (0.01)*	0.00 (0.01)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)*
Male	4.24 (0.30)**	9.32 (0.32)**	-0.16 (0.28)	-0.14 (0.02)**	-0.52 (0.03)**	0.23 (0.05)
Low Birthweight	0.11 (0.61)	0.07 (0.68)	-0.51 (0.53)	0.02 (0.04)	0.00 (0.09)	0.02 (0.07)
Poor prior health	1.12 (0.61)+	2.26 (0.61)**	2.70 (0.48)**	0.06 (0.04)	0.26 (0.11)*	0.24 (0.08)**
Pregnancy (at wave 4)	-- --	-- --	-- --	-0.14 (0.04)**	0.70 (0.07)**	-- --
Parent single	0.78 (0.86)	0.49 (0.88)	0.52 (0.67)	0.04 (0.04)	0.09 (0.10)	0.06 (0.09)
Parent divorced/separated	0.31 (0.41)	-0.09 (0.48)	0.10 (0.34)	0.00 (0.02)	0.00 (0.05)	-0.01 (0.05)
School Covariates						
School avg GPA	0.93 (1.00)	1.48 (1.06)	0.66 (0.61)	0.04 (0.05)	0.09 (0.12)	0.08 (0.10)
School avg college completion	-0.71 (2.91)	-1.42 (2.65)	-0.26 (2.04)	-0.04 (0.13)	0.16 (0.28)	-0.39 (0.15)**
School avg family SES	-1.05 (1.34)	-0.60 (1.33)	-1.20 (1.02)	-0.02 (0.06)	-0.27 (0.14)+	-0.10 (0.12)
School percent Asian	-3.54 (3.00)	-3.94 (4.00)	-2.72 (2.11)	0.21 (0.19)	-0.23 (0.31)	0.12 (0.11)
School percent Black	0.44 (1.44)	0.42 (1.60)	1.77 (0.96)+	0.10 (0.06)+	0.29 (0.13)*	0.10 (0.25)
School percent Latino	-4.78 (2.44)+	-0.22 (2.00)	4.60 (1.58)**	-0.22 (0.16)	0.18 (0.23)	-0.03 (0.30)
Small school	0.14 (0.56)	-0.03 (0.50)	0.66 (0.35)+	-0.01 (0.03)	0.08 (0.06)	0.01 (0.04)
Large school	-0.07 (0.40)	-0.36 (0.57)	-0.37 (0.24)	0.00 (0.02)	-0.04 (0.04)	-0.04 (0.04)
School has HS grades	-1.04 (1.02)	0.81 (0.53)	1.08 (1.20)	0.09 (0.05)+	0.17 (0.15)	0.14 (0.05)**
Urban	-0.47 (0.45)	-1.08 (0.51)*	-0.46 (0.27)+	0.01 (0.02)	-0.02 (0.04)	-0.10 (0.04)*
Rural	0.07 (0.52)	0.06 (0.50)	0.38 (0.34)	0.02 (0.02)	0.04 (0.05)	0.04 (0.05)
West	0.44 (0.73)	-0.04 (0.85)	0.43 (0.40)	0.05 (0.03)	-0.01 (0.07)	-0.04 (0.05)
Midwest	-0.29 (0.40)	0.37 (0.47)	0.06 (0.25)	0.05 (0.02)**	-0.01 (0.04)	0.04 (0.04)
Northeast	-0.48 (0.45)	-0.64 (0.56)	-0.10 (0.30)	0.05 (0.02)*	0.01 (0.05)	0.00 (0.04)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01.

Table B.26. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analyses Considering Variations in Link between Achievement and Physiological Health Outcomes across the Socioeconomic Spectrum, with Deciles of Family Socioeconomic Status at either end of the Spectrum

	Diastolic Blood Pressure *n* =14,296 Coef (SE)	Systolic Blood Pressure *n* =14,296 Coef (SE)	Body Mass Index *n* =14,564 Coef (SE)	Epstein-Barr Virus Antibodies *n* =13,132 Coef (SE)	C-Reactive Protein Levels *n* =13,132 Coef (SE)	Allostatic Load *n* =12,672 Coef (SE)
Acadamic Achievement						
GPA	-0.24 (0.24)	-0.30 (0.29)	-0.46 (0.19)*	-0.01 (0.01)	-0.04 (0.03)	-0.04 (0.03)
College completion	-0.68 (0.40)+	-0.74 (0.36)	-1.28 (0.27)**	-0.02 (0.02)	-0.17 (0.04)**	-0.16 (0.04)**
Family SES: Bottom Decile	0.80 (0.76)	0.52 (0.89)	0.52 (0.73)	0.02 (0.04)	0.12 (0.11)	0.12 (0.10)
Family SES: Top Decile	-0.17 (0.64)	0.83 (1.00)	-0.32 (0.45)	-0.04 (0.04)	-0.08 (0.10)	-0.05 (0.07)
Interactions						
GPA X Bottom Decile	0.96 (0.80)	0.72 (0.94)	-0.09 (0.65)	0.03 (0.05)	0.01 (0.10)	0.04 (0.09)
GPA X Top Decile	-0.23 (0.66)	0.21 (0.73)	-0.06 (0.49)	0.00 (0.05)	0.01 (0.09)	-0.02 (0.07)
College X Bottom Decile	1.40 (1.77)	0.90 (2.34)	1.24 (2.00)	0.02 (0.12)	0.07 (0.25)	0.21 (0.26)
College X Top Decile	-0.01 (1.33)	-1.49 (1.79)	-0.40 (0.91)	-0.05 (0.06)	-0.15 (0.18)	-0.05 (0.13)
Individual & Family Covariates						
Asian	1.47 (0.92)	0.44 (1.38)	-1.18 (0.57)*	-0.05 (0.05)	-0.33 (0.09)**	-0.14 (0.09)
Black	0.33 (0.73)	1.13 (0.77)	0.58 (0.61)	0.09 (0.03)**	-0.04 (0.08)	0.13 (0.08)
Latino	-0.60 (0.60)	-0.35 (0.64)	0.28 (0.49)	0.05 (0.05)	0.11 (0.08)	0.10 (0.07)
Multiracial & other	1.25 (0.58)*	0.82 (0.63)	0.99 (0.63)	-0.01 (0.03)	0.03 (0.09)	0.16 (0.08)*
Age	0.03 (0.01)**	0.02 (0.01)*	0.00 (0.01)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)*
Male	4.23 (0.30)**	9.32 (0.32)**	-0.16 (0.28)	-0.14 (0.02)**	-0.52 (0.03)**	0.23 (0.05)**
Low Birthweight	0.09 (0.60)	0.07 (0.67)	-0.52 (0.52)	0.02 (0.04)	0.00 (0.09)	0.02 (0.07)
Poor prior health	1.11 (0.61)+	2.26 (0.61)**	2.71 (0.47)**	0.06 (0.04)	0.26 (0.11)*	0.24 (0.08)**
Pregnancy (at wave 4)	-- --	-- --	-- --	-0.14 (0.04)**	0.70 (0.07)**	-- --
Parent single	0.78 (0.86)	0.49 (0.88)	0.52 (0.67)	0.04 (0.04)	0.09 (0.10)	0.06 (0.09)
Parent divorced/separated	0.30 (0.41)	-0.11 (0.47)	0.09 (0.33)	0.00 (0.02)	0.00 (0.05)	-0.01 (0.05)
School Covariates						
School avg GPA	0.93 (1.00)	1.43 (1.06)	0.65 (0.61)	0.04 (0.05)	0.09 (0.12)	0.08 (0.10)
School avg college completion	-0.78 (2.92)	-1.48 (2.64)	-0.29 (2.05)	-0.05 (0.13)	0.15 (0.28)	-0.38 (0.15)*
School avg family SES	-0.98 (1.36)	-0.06 (1.34)	-1.13 (1.04)	0.00 (0.06)	-0.21 (0.15)	-0.09 (0.12)
School percent Asian	-3.61 (2.96)	-3.77 (3.88)	-2.68 (2.13)	0.21 (0.18)	-0.22 (0.31)	-0.06 (0.29)
School percent Black	0.45 (1.44)	0.40 (1.58)	1.77 (0.96)+	0.10 (0.06)+	0.29 (0.13)*	0.12 (0.11)
School percent Latino	-4.81 (2.46)+	-0.17 (2.00)	4.60 (1.58)**	-0.21 (0.16)	0.19 (0.23)	0.09 (0.25)
Small school	0.13 (0.56)	-0.02 (0.49)	0.66 (0.35)+	-0.01 (0.03)	0.08 (0.06)	0.01 (0.04)
Large school	-0.07 (0.41)	-0.37 (0.57)	-0.37 (0.24)	0.00 (0.02)	-0.04 (0.04)	-0.04 (0.04)
School has HS grades	-1.07 (1.01)	0.79 (0.52)	1.05 (1.18)	0.09 (0.05)+	0.17 (0.14)	0.14 (0.05)**
Urban	-0.47 (0.45)	-1.07 (0.51)*	-0.46 (0.27)+	0.01 (0.02)	-0.02 (0.04)	-0.10 (0.04)**
Rural	0.06 (0.52)	0.09 (0.50)	0.39 (0.35)	0.02 (0.02)	0.05 (0.05)	0.04 (0.05)
West	0.44 (0.71)	-0.10 (0.81)	0.40 (0.41)	0.05 (0.03)	-0.02 (0.07)	-0.04 (0.05)
Midwest	-0.29 (0.40)	0.36 (0.46)	0.06 (0.25)	0.05 (0.02)**	-0.01 (0.04)	0.04 (0.04)
Northeast	-0.49 (0.45)	-0.65 (0.56)	-0.11 (0.30)	0.05 (0.02)*	0.01 (0.05)	-0.01 (0.04)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01.

Table B.27. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analyses Considering School-wide Socioeconomic Status as a Moderator of Link between Achievement, Deciles of Family Socioeconomic Status at either end of the Spectrum, and Physiological Health Outcomes

	Diastolic Blood Pressure *n* =14,296 Coef (SE)	Systolic Blood Pressure *n* =14,296 Coef (SE)	Body Mass Index *n* =14,564 Coef (SE)	Epstein-Barr Virus Antibodies *n* =13,132 Coef (SE)	C-Reactive Protein Levels *n* =13,132 Coef (SE)	Allostatic Load *n* =12,672 Coef (SE)
Acadamic Achievement						
GPA	-0.25 (0.21)	-0.40 (0.30)	-0.46 (0.16)**	-0.01 (0.01)	-0.05 (0.03)+	-0.05 (0.03)+
College completion	-0.80 (0.33)*	-0.71 (0.38)+	-1.34 (0.22)**	-0.02 (0.02)	-0.21 (0.04)**	-0.15 (0.04)**
Family SES: Bottom Decile	0.59 (0.74)	0.65 (1.01)	0.37 (0.66)	0.03 (0.04)	0.07 (0.11)	0.12 (0.11)
Family SES: Top Decile	0.42 (0.67)	1.08 (1.11)	-0.27 (0.42)	-0.03 (0.04)	-0.03 (0.09)	-0.03 (0.08)
School SES	-0.79 (1.58)	0.08 (1.64)	-0.71 (1.14)	-0.02 (0.07)	-0.24 (0.17)	-0.15 (0.14)
Two Way Interactions						
GPA X Bottom Decile	0.11 (0.85)	0.14 (1.25)	-0.35 (0.68)	0.01 (0.05)	0.00 (0.10)	-0.01 (0.11)
GPA X Top Decile	-0.33 (0.59)	-0.10 (0.79)	-0.29 (0.47)	-0.01 (0.04)	-0.03 (0.09)	-0.05 (0.08)
College X Bottom Decile	1.14 (1.78)	1.25 (2.51)	1.25 (1.69)	0.02 (0.12)	0.03 (0.23)	0.25 (0.29)
College X Top Decile	-0.13 (1.34)	-1.16 (2.04)	-0.10 (0.84)	-0.03 (0.06)	-0.08 (0.17)	-0.01 (0.15)
Bottom Decile X School SES	0.99 (2.55)	0.72 (3.23)	0.53 (1.93)	0.08 (0.17)	-0.01 (0.35)	0.02 (0.36)
Top Decile X School SES	-1.50 (1.91)	-1.59 (2.54)	-0.21 (1.35)	-0.03 (0.10)	-0.35 (0.23)	-0.12 (0.22)
GPA X School SES	-0.73 (0.76)	-0.65 (0.98)	-0.41 (0.51)	-0.01 (0.04)	0.03 (0.08)	-0.06 (0.09)
College X School SES	1.29 (1.11)	1.56 (1.50)	0.22 (0.90)	-0.05 (0.06)	-0.09 (0.15)	0.04 (0.17)
Three Way Interactions						
GPA X Bottom Decile X School SES	-3.20 (3.36)	-3.50 (4.86)	-2.06 (2.48)	-0.07 (0.22)	-0.09 (0.41)	-0.30 (0.40)
GPA X Top Decile X School SES	2.08 (5.72)	1.22 (7.44)	1.47 (3.00)	0.30 (0.38)	-0.18 (0.92)	0.25 (0.94)
College X Bottom Decile X School SES	2.27 (1.57)	2.22 (2.02)	0.95 (1.06)	0.07 (0.10)	0.25 (0.18)	0.27 (0.17)
College X Top Decile X School SES	-0.92 (3.26)	-1.61 (4.58)	-1.66 (2.27)	0.08 (0.17)	0.26 (0.39)	-0.14 (0.38)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01. All covariates listed in Tables B.25 and B.26 are included in these models.

Alternative Sample Selection. Additional models sought to test the robustness of results across different analytic samples that intended to better attend to the many complex social factors and forces that contribute to racial/ethnic health inequities in the United States.

Considering potential differences across immigrant status. One important complexity in racial/ethnic health disparity research in the United States is within-group differences across nativity status. For example, research suggests that Black immigrants in the United States may actually experience better health than their native-born Black peers, and, by some measures, even better outcomes than their native-born White peers (Doemekpor & Dinwiddie, 2015; Read, Emerson, & Tarlov, 2005; Pallotto, Collins, & David, 2000; Singh & Siahpush, 2002). Further, evidence suggests that associations between discrimination, a primary stressor among ethnic minorities, and poor health outcomes increase with time spent in the United States among African, Asian, and Latino immigrants, pointing to the importance of considering immigrant status in links between stress and health (Gee, Ro, Gavin, & Takeuchi, 2008; Gee, Ryan, LaFlamme, & Holt, 2010). In order to consider the role of immigrant status in the present analyses, a set of models excluded adolescents from immigrant households from the non-Hispanic Black group. Immigrant households were delineated as those in which the youth reported that either of their parents was born outside of the United States, thereby excluding 185 adolescents from the non-Hispanic Black group. Unfortunately, it was not possible to exclude immigrant households from the other racial/ethnic groups of interest due to sample size limitations (the Latino subgroup, for example, was comprised of nearly 70% immigrant households).

Tables B.28 through B.30 present results from these models, suggesting that restricting the sample to native born African American adolescents did not result in any substantive changes to prior patterns of results. Identifying as Black or African American still emerged as predictive of higher levels of Epstein-Barr virus antibodies, and links between college completion and a variety of physiological health outcomes continued to differ between non-Hispanic Black adolescents and their non-Hispanic White peers. One minor change emerged, in which the variation in links between college completion and EBV antibodies, which previously approached significance, emerged as significantly different ($p < .05$).

Table B.28. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analyses Predicting Physiological Health Outcomes, Restricting the non-Hispanic Black group to Non-Immigrant Households

	Diastolic Blood Pressure *n* =14,115 Coef (SE)	Systolic Blood Pressure *n* =14,115 Coef (SE)	Body Mass Index *n* =14,458 Coef (SE)	Epstein-Barr Virus Antibodies *n* =13,014 Coef (SE)	C-Reactive Protein Levels *n* =13,014 Coef (SE)	Allostatic Load *n* =12,532 Coef (SE)
Acadamic Achievement						
GPA	-0.12 (0.20)	-0.26 (0.29)	-0.35 (0.16)*	-0.01 (0.01)	-0.03 (0.03)	-0.03 (0.03)
College completion	-0.87 (0.33)**	-0.70 (0.35)*	-1.40 (0.20)**	-0.02 (0.02)	-0.20 (0.04)**	-0.16 (0.04)**
Family SES	-0.15 (0.22)	-0.19 (0.34)	-0.42 (0.13)**	-0.03 (0.01)*	-0.07 (0.03)*	-0.08 (0.03)**
Race/Ethnicity						
Asian	1.23 (0.88)	0.43 (1.38)	-1.18 (0.54)*	-0.04 (0.05)	-0.33 (0.09)**	-0.14 (0.09)
Black	0.52 (0.64)	1.29 (0.83)	0.86 (0.50)*	0.12 (0.03)**	0.00 (0.07)	0.13 (0.09)
Latino	-0.65 (0.53)	-0.45 (0.65)	0.30 (0.42)	0.04 (0.04)	0.12 (0.07)+	0.08 (0.07)
Multiracial & other	0.82 (0.49)+	0.80 (0.63)	0.75 (0.52)	0.01 (0.03)	0.03 (0.08)	0.16 (0.08)*
Individual & Family Covariates						
Age	0.04 (0.01)**	0.02 (0.01)*	0.01 (0.01)+	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)*
Male	4.26 (0.24)**	9.39 (0.31)**	-0.10 (0.22)	-0.14 (0.01)**	-0.50 (0.03)**	0.23 (0.04)**
Low Birthweight	0.43 (0.50)	0.12 (0.68)	-0.58 (0.41)	0.03 (0.03)	0.00 (0.07)	0.02 (0.07)
Poor prior health	1.19 (0.49)*	2.24 (0.60)**	2.63 (0.39)**	0.05 (0.03)+	0.27 (0.09)**	0.24 (0.08)**
Pregnancy (at wave 4)	-- --	-- --	-- --	-0.11 (0.04)**	0.74 (0.06)**	-- --
Parent single	0.74 (0.68)	0.37 (0.91)	0.27 (0.53)	0.03 (0.04)	0.02 (0.09)	0.05 (0.09)
Parent divorced/separated	0.23 (0.35)	-0.11 (0.48)	-0.08 (0.28)	-0.01 (0.02)	-0.01 (0.04)	-0.02 (0.05)
School Covariates						
School avg GPA	0.59 (0.78)	1.44 (1.07)	0.68 (0.51)	0.01 (0.04)	0.00 (0.11)	0.09 (0.10)
School avg college completion	-0.67 (1.87)	-1.29 (2.67)	-1.87 (1.60)	-0.07 (0.10)	-0.05 (0.26)	-0.16 (0.23)
School avg family SES	-0.61 (0.91)	-0.31 (1.35)	-0.23 (0.79)	0.01 (0.05)	-0.10 (0.13)	-0.11 (0.12)
School percent Asian	-2.41 (2.21)	-4.02 (4.10)	-2.00 (1.88)	0.28 (0.19)	-0.16 (0.39)	-0.06 (0.31)
School percent Black	-0.43 (1.10)	0.52 (1.68)	1.69 (0.71)*	0.08 (0.04)+	0.18 (0.12)	0.10 (0.12)
School percent Latino	-2.59 (2.16)	0.20 (3.02)	4.90 (1.55)**	-0.25 (0.15)	0.32 (0.29)	0.02 (0.28)
Small school	-0.01 (0.35)	-0.05 (0.51)	0.42 (0.24)	-0.01 (0.02)	-0.01 (0.05)	0.01 (0.04)
Large school	-0.20 (0.37)	-0.36 (0.59)	-0.30 (0.22)	0.00 (0.02)	-0.07 (0.04)	-0.04 (0.04)
School has HS grades	0.75 (0.40)+	0.79 (0.55)	0.79 (0.26)**	0.03 (0.02)	0.10 (0.06)+	0.14 (0.05)**
Urban	-0.48 (0.35)	-1.07 (0.52)*	-0.47 (0.24)+	0.01 (0.02)	-0.01 (0.04)	-0.09 (0.04)*
Rural	-0.12 (0.45)	0.07 (0.51)	0.31 (0.31)	0.01 (0.02)	0.06 (0.06)	0.02 (0.05)
West	-0.20 (0.52)	0.03 (0.89)	0.06 (0.32)	0.03 (0.02)	-0.06 (0.06)	-0.02 (0.05)
Midwest	-0.09 (0.33)	0.41 (0.47)	-0.06 (0.24)	0.04 (0.02)*	0.01 (0.04)	0.04 (0.04)
Northeast	-0.75 (0.39)+	-0.56 (0.56)	-0.18 (0.28)	0.04 (0.02)	-0.01 (0.05)	0.00 (0.05)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01.

Table B.29. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analyses Considering Variations in Links between Achievement and Physiological Health Outcomes across Racial/Ethnic Groups, Restricting the non-Hispanic Black group to Non-Immigrant Households

	Diastolic Blood Pressure *n* =14,115 Coef (SE)	Systolic Blood Pressure *n* =14,115 Coef (SE)	Body Mass Index *n* =14,458 Coef (SE)	Epstein-Barr Virus Antibodies *n* =13,014 Coef (SE)	C-Reactive Protein Levels *n* =13,014 Coef (SE)	Allostatic Load *n* =12,532 Coef (SE)
Acadamic Achievement						
GPA	-0.07 (0.19)	-0.19 (0.28)	-0.34 (0.14)*	-0.01 (0.01)	-0.03 (0.03)	-0.03 (0.03)
College completion	-0.85 (0.26)**	-0.71 (0.40)+	-1.26 (0.23)**	-0.04 (0.02)*	-0.18 (0.04)**	-0.13 (0.04)**
Race/Ethnicity						
Asian	1.40 (0.94)	0.60 (1.48)	-0.73 (0.53)	-0.02 (0.06)	-0.34 (0.10)**	-0.12 (0.09)
Black	0.58 (0.63)	1.28 (0.81)	1.07 (0.47)*	0.16 (0.03)**	0.03 (0.07)	0.18 (0.08)*
Latino	-0.61 (0.52)	-0.42 (0.65)	0.38 (0.43)	0.08 (0.05)+	0.14 (0.07)+	0.11 (0.07)
Multiracial & other	0.93 (0.54)+	0.97 (0.70)	0.84 (0.56)	0.03 (0.03)	0.04 (0.09)	0.17 (0.09)*
Interactions						
GPA X Asian	0.10 (0.89)	0.37 (1.31)	-1.23 (0.62)*	0.00 (0.07)	0.11 (0.12)	0.00 (0.09)
GPA X Black	0.33 (0.43)	0.30 (0.62)	0.13 (0.44)	-0.02 (0.04)	-0.02 (0.08)	0.01 (0.07)
GPA X Latino	0.87 (0.54)	1.30 (0.80)	0.23 (0.39)	0.10 (0.04)**	0.01 (0.07)	0.08 (0.06)
GPA X Multiracial/Other	-0.17 (0.79)	-0.08 (1.17)	-0.34 (0.72)	0.04 (0.04)	0.01 (0.11)	-0.05 (0.12)
College X Asian	-3.18 (1.94)	-4.71 (2.22)*	-0.72 (0.68)	-0.06 (0.06)	-0.29 (0.19)	-0.30 (0.22)
College X Black	0.06 (0.69)	-0.55 (0.96)	1.63 (0.46)**	0.11 (0.05)*	0.24 (0.10)*	0.33 (0.09)**
College X Latino	-1.13 (0.82)	-1.80 (1.23)	0.09 (0.96)	0.02 (0.08)	0.20 (0.16)	0.05 (0.14)
College X Multiracial/Other	1.26 (1.35)	2.04 (2.58)	1.18 (1.08)	-0.03 (0.08)	0.12 (0.16)	0.17 (0.22)
Individual & Family Covariates						
Age	0.04 (0.01)**	0.02 (0.01)*	0.01 (0.01)+	0.00 (0.00)*	0.00 (0.00)	0.00 (0.00)**
Male	4.30 (0.22)**	9.44 (0.31)**	-0.08 (0.22)	-0.16 (0.02)**	-0.50 (0.03)**	0.24 (0.04)**
Low Birthweight	0.43 (0.51)	0.13 (0.68)	-0.58 (0.41)	0.00 (0.04)	0.00 (0.07)	0.02 (0.07)
Poor prior health	1.22 (0.49)*	2.29 (0.60)**	2.61 (0.41)**	0.03 (0.04)	0.28 (0.08)**	0.24 (0.08)**
Pregnancy (at wave 4)	-- --	-- --	-- --	-0.08 (0.04)*	0.74 (0.06)**	-- --
Family SES	-0.17 (0.22)	-0.22 (0.34)	-0.42 (0.13)**	-0.03 (0.02)+	-0.07 (0.03)*	-0.08 (0.03)**
Parent single	0.74 (0.66)	0.34 (0.88)	0.33 (0.52)	0.03 (0.04)	0.02 (0.09)	0.06 (0.09)
Parent divorced/separated	0.20 (0.34)	-0.15 (0.46)	-0.09 (0.28)	-0.02 (0.02)	-0.02 (0.04)	-0.02 (0.04)
School Covariates						
School avg GPA	0.54 (0.77)	1.41 (1.07)	0.55 (0.50)	0.01 (0.05)	-0.01 (0.11)	0.07 (0.10)
School avg college completion	-0.78 (1.86)	-1.38 (2.64)	-2.03 (1.52)	0.00 (0.13)	-0.06 (0.26)	-0.20 (0.23)
School avg family SES	-0.59 (0.90)	-0.35 (1.33)	-0.10 (0.75)	-0.09 (0.07)	-0.09 (0.13)	-0.08 (0.12)
School percent Asian	-2.33 (2.14)	-3.93 (3.89)	-1.93 (1.85)	0.41 (0.20)*	-0.16 (0.40)	-0.06 (0.30)
School percent Black	-0.47 (1.07)	0.48 (1.64)	1.66 (0.69)*	0.05 (0.05)	0.17 (0.12)	0.09 (0.11)
School percent Latino	-2.81 (2.13)	-0.13 (2.97)	4.79 (1.54)**	-0.29 (0.17)	0.31 (0.29)	0.00 (0.28)
Small school	-0.01 (0.35)	-0.03 (0.50)	0.36 (0.25)	0.00 (0.02)	-0.01 (0.05)	0.00 (0.04)
Large school	-0.20 (0.37)	-0.35 (0.59)	-0.33 (0.22)	0.02 (0.02)	-0.07 (0.04)+	-0.04 (0.04)
School has HS grades	0.73 (0.39)+	0.77 (0.54)	0.76 (0.26)**	0.01 (0.02)	0.10 (0.06)+	0.13 (0.05)*
Urban	-0.46 (0.35)	-1.03 (0.50)*	-0.47 (0.24)**	0.01 (0.02)	-0.01 (0.04)	-0.09 (0.04)*
Rural	-0.10 (0.44)	0.09 (0.51)	0.33 (0.30)	-0.01 (0.02)	0.07 (0.06)	0.03 (0.05)
West	-0.20 (0.51)	0.04 (0.85)	0.05 (0.32)	0.02 (0.03)	-0.06 (0.06)	-0.03 (0.05)
Midwest	-0.09 (0.32)	0.41 (0.46)	-0.05 (0.23)	0.04 (0.02)+	0.01 (0.04)	0.04 (0.04)
Northeast	-0.71 (0.39)	-0.51 (0.56)	-0.14 (0.28)	0.01 (0.03)	-0.01 (0.05)	0.01 (0.04)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01.

Table B.30. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analyses Considering School-wide Perceptions of Peer Prejudice as a Moderator of Links between Achievement and Physiological Health Outcomes across Racial/Ethnic Groups, Restricting the non-Hispanic Black group to Non-Immigrant Households

	Diastolic Blood Pressure *n* =14,115 Coef (SE)	Systolic Blood Pressure *n* =14,115 Coef (SE)	Body Mass Index *n* =14,458 Coef (SE)	Epstein-Barr Virus Antibodies *n* =13,014 Coef (SE)	C-Reactive Protein Levels *n* =13,014 Coef (SE)	Allostatic Load *n* =12,532 Coef (SE)
Acadamic Achievement						
GPA	-0.12 (0.21)	-0.23 (0.31)	-0.36 (0.16)*	-0.01 (0.01)	-0.04 (0.03)	-0.03 (0.03)
College completion	-0.87 (0.28)**	-0.73 (0.39)+	-1.26 (0.23)**	-0.02 (0.02)	-0.17 (0.04)**	-0.12 (0.04)**
Race/Ethnicity						
Asian	0.88 (0.79)	-0.07 (1.09)	-0.93 (0.52)+	-0.03 (0.05)	-0.37 (0.10)**	-0.15 (0.09)
Black	0.41 (0.62)	1.19 (0.81)	1.00 (0.48)*	0.13 (0.03)**	0.02 (0.07)	0.17 (0.09)
Latino	-0.77 (0.50)	-0.54 (0.61)	0.33 (0.44)	0.06 (0.03)	0.13 (0.08)+	0.10 (0.07)
Multiracial & other	0.78 (0.53)	0.82 (0.70)	0.77 (0.56)	0.00 (0.03)	0.02 (0.09)	0.16 (0.09)+
School Perceptions of Prejudice	1.41 (0.79)+	0.91 (1.32)	0.37 (0.51)	0.04 (0.04)	0.11 (0.10)	0.10 (0.09)
Two Way Interactions						
GPA X Asian	0.00 (0.99)	0.05 (1.46)	-1.31 (0.61)*	-0.03 (0.06)	0.12 (0.12)	0.02 (0.10)
GPA X Black	0.40 (0.46)	0.37 (0.64)	0.07 (0.48)	0.00 (0.03)	-0.02 (0.09)	0.01 (0.07)
GPA X Latino	0.95 (0.54+	1.33 (0.81)	0.23 (0.40)	0.10 (0.04)**	0.01 (0.07)	0.09 (0.06)
GPA X Multiracial/Other	-0.06 (0.78)	-0.07 (1.16)	-0.35 (0.72)	0.00 (0.05)	0.02 (0.11)	-0.05 (0.12)
College X Asian	-2.70 (1.93)	-3.80 (1.87)*	-0.51 (0.72)	-0.06 (0.07)	-0.37 (0.19)+	-0.39 (0.22)+
College X Black	-0.21 (0.73)	-0.98 (0.99)	1.47 (0.50)**	0.06 (0.05)	0.24 (0.10)*	0.31 (0.10)**
College X Latino	-1.15 (0.84)	-1.73 (1.25)	0.08 (0.96)	-0.02 (0.06)	0.18 (0.16)	0.03 (0.14)
College X Multiracial/Other	1.26 (1.36)	1.99 (2.60)	1.14 (1.09)	-0.08 (0.08)	0.09 (0.16)	0.15 (0.22)
Prejudice X Asian	-9.03 (7.46)	-14.19 (12.92)	-4.11 (2.56)	-0.20 (0.24)	-0.47 (0.57)	-0.65 (0.54)
Prejudice X Black	1.57 (1.31)	2.76 (1.84)	1.09 (0.91)	0.05 (0.07)	0.36 (0.18)*	0.29 (0.14)*
Prejudice X Latino	3.28 (1.61)*	4.04 (2.24)+	2.28 (1.15)*	0.12 (0.11)	0.13 (0.20)	0.07 (0.24)
Prejudice X Multiracial/Other	1.66 (1.45)	-0.48 (2.29)	-0.67 (1.02)	-0.09 (0.10)	-0.06 (0.22)	-0.11 (0.23)
GPA X Prejudice	0.50 (0.64)	0.37 (0.87)	0.03 (0.39)	0.00 (0.04)	0.04 (0.08)	0.03 (0.09)
College X Prejudice	-0.50 (1.04)	0.39 (1.69)	-0.14 (0.55)	0.03 (0.05)	-0.16 (0.13)	-0.15 (0.12)
Three Way Interactions						
GPA X Asian X Prejudice	0.72 (5.11)	0.20 (7.62)	0.64 (2.56)	0.32 (0.28)	0.35 (0.65)	0.63 (0.70)
GPA X Black X Prejudice	-1.01 (1.46)	-0.63 (2.03)	-0.98 (1.36)	-0.03 (0.08)	-0.20 (0.23)	-0.26 (0.20)
GPA X Latino X Prejudice	1.20 (2.48)	1.60 (3.34)	1.20 (2.01)	0.02 (0.15)	0.16 (0.31)	0.10 (0.34)
GPA X Multi/Other X Prejudice	-0.08 (2.49)	0.61 (3.64)	0.22 (1.57)	-0.05 (0.12)	0.10 (0.30)	-0.02 (0.33)
College X Asian X Prejudice	9.84 (10.03)	11.87 (11.57)	4.92 (4.36)	-0.29 (0.44)	-0.87 (0.82)	-0.94 (1.00)
College X Black X Prejudice	-2.16 (2.31)	-3.79 (3.34)	-1.16 (1.31)	-0.06 (0.15)	0.06 (0.23)	-0.05 (0.28)
College X Latino X Prejudice	-3.37 (3.59)	1.20 (4.61)	-1.25 (2.50)	0.20 (0.25)	0.15 (0.61)	0.24 (0.55)
College X Multi/Other X Prejudice	-1.79 (2.88)	-0.31 (4.82)	0.56 (2.53)	0.24 (0.22)	-0.09 (0.49)	0.15 (0.49)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01. All covariates listed in Tables B.28 and B.29 are also included in these models.

Considering Mexican American youth. A wealth of research suggests that socioeconomic status, access to upward social mobility, reasons for migration to the United States, and both reception and models of incorporation into U.S. society vary across the ethnic subgroups that comprise the racial/ethnic groups of interest in the current study (e.g., Bohon, Johnson, & Gorman, 2006). In order to better account for such differences within the panethnic Latino group, an additional set of models was estimated that focused on Mexican adolescents (n = 645), non-Hispanic Black adolescents, and non-Hispanic White adolescents. Unfortunately, other Latino subgroups could not be considered independently in these analyses due to cell size limitations. Groups within the non-Hispanic Asian group were similarly too small for separate analyses.

Results from these models are displayed in Tables B.31 – B.33, and suggest that links with later physiological health were strengthened among Mexican young adults compared to results considering the broader, panethnic Latino group: the trend, positive link between membership in the Latino group and later C-reactive protein levels emerged as significant in models considering solely Mexican young adults. Additionally, positive, significant links emerged with both Epstein-Barr Virus antibodies and allostatic load among Mexican young adults, which had not emerged among the Latino group.

Variations in links between and achievement and later health were also strengthened among Mexican American youth compared to their non-Hispanic White peers. In the main models considering the panethnic Latino group, links between GPA and later EBV varied such that GPA was positively linked with heightened levels of inflammation compared to the reverse pattern among non-Hispanic White youth. This divergent link persisted in models considering Mexican American youth. Additionally,

links between college completion and later physiological health varied across Mexican American youth and their non-Hispanic White peers: college completion predicted higher inflammation for Mexican adolescents but, conversely, lower levels of inflammation for their non-Hispanic White peers on measures of body mass index, C-reactive protein levels, and allostatic load. These links did not vary significantly across youth in the panethnic Latino and non-Hispanic White groups, and nearly parallel those seen among the non-Hispanic Black group. However, divergent links between school-wide peer perceptions of prejudice and later physiological health did not emerge among Mexican American youth. Previously, heightened levels of perceived prejudice by students within schools were associated with higher levels of inflammation in later adulthood for Latino students (but not for their White peers).

Table B.31. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analyses Predicting Physiological Health Outcomes among non-Hispanic Black, Mexican, and non-Hispanic White Young Adults

	Diastolic Blood Pressure *n* =13,434 Coef (SE)	Systolic Blood Pressure *n* =13,434 Coef (SE)	Body Mass Index *n* =14,489 Coef (SE)	Epstein-Barr Virus Antibodies *n* =12,483 Coef (SE)	C-Reactive Protein Levels *n* =12,483 Coef (SE)	Allostatic Load *n* =11,960 Coef (SE)
Acadamic Achievement						
GPA	-0.11 (0.19)	-0.23 (0.30)	-0.27 (0.12)*	-0.01 (0.01)	-0.04 (0.03)	-0.03 (0.03)
College completion	-0.80 (0.35)*	-0.52 (0.38)	-1.32 (0.19)**	-0.01 (0.02)	-0.19 (0.04)**	-0.14 (0.04)**
Race/Ethnicity						
Black	0.63 (0.65)	1.59 (0.82)+	1.17 (0.57)*	0.12 (0.03)**	0.00 (0.07)	0.15 (0.09)
Mexican	0.01 (0.63)	0.06 (0.89)	-0.45 (0.47)	0.07 (0.04)+	0.17 (0.08)*	0.18 (0.06)**
Individual & Family						
Age	0.04 (0.01)**	0.02 (0.01)+	0.01 (0.01)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)*
Male	4.22 (0.23)**	9.31 (0.31)**	-0.35 (0.22)	-0.13 (0.02)**	-0.50 (0.03)**	0.24 (0.04)**
Low Birthweight	0.41 (0.53)	0.19 (0.68)	-0.45 (0.47)	0.03 (0.04)	0.02 (0.07)	0.04 (0.08)
Poor prior health	1.29 (0.51)*	2.48 (0.57)**	2.59 (0.58)**	0.06 (0.02)*	0.30 (0.07)**	0.26 (0.07)**
Pregnancy (at wave 4)	-- --	-- --	-- --	-0.11 (0.04)**	0.75 (0.06)**	-- --
Family SES	-0.27 (0.21)	-0.42 (0.33)	-0.53 (0.16)**	-0.03 (0.02)*	-0.08 (0.03)*	-0.08 (0.03)**
Parent single	0.64 (0.62)	0.52 (0.78)	0.23 (0.47)	0.07 (0.04)+	0.00 (0.07)	0.06 (0.08)
Parent divorced/separated	-0.06 (0.31)	-0.71 (0.40)+	-0.12 (0.27)	-0.01 (0.02)	-0.01 (0.04)	-0.03 (0.04)
School Covariates						
School avg GPA	0.48 (0.84)	1.14 (1.13)	0.19 (0.54)	-0.01 (0.04)	-0.08 (0.11)	0.03 (0.10)
School avg college completion	-0.64 (2.02)	-0.40 (2.58)	-1.75 (1.61)	0.01 (0.10)	0.13 (0.28)	-0.01 (0.25)
School avg family SES	-0.77 (1.00)	-0.95 (1.43)	-0.13 (0.82)	-0.04 (0.05)	-0.19 (0.15)	-0.21 (0.13)
School percent Asian	0.62 (1.96)	-0.75 (3.55)	-1.57 (2.34)	0.48 (0.22)*	0.02 (0.62)	0.21 (0.38)
School percent Black	-1.19 (1.14)	-1.50 (1.50)	1.12 (0.82)	0.02 (0.05)	0.10 (0.12)	-0.04 (0.14)
School percent Latino	-4.21 (2.38)+	-0.92 (3.42)	4.25 (1.99)*	-0.35 (0.16)*	0.16 (0.40)	-0.22 (0.33)
Small school	0.11 (0.36)	0.21 (0.48)	0.40 (0.26)	0.00 (0.02)	-0.02 (0.05)	0.01 (0.05)
Large school	0.03 (0.36)	-0.01 (0.52)	-0.25 (0.25)	0.00 (0.02)	-0.07 (0.05)	-0.03 (0.04)
School has HS grades	0.37 (0.38)	0.58 (0.45)	0.77 (0.30)*	0.04 (0.02)	0.11 (0.06)+	0.15 (0.05)**
Urban	-0.15 (0.35)	-0.76 (0.48)	-0.38 (0.24)	0.01 (0.02)	0.00 (0.04)	-0.06 (0.04)+
Rural	0.02 (0.46)	0.10 (0.54)	0.35 (0.34)	0.00 (0.02)	0.07 (0.06)	0.02 (0.06)
West	-0.48 (0.42)	-0.61 (0.54)	-0.20 (0.37)	0.01 (0.02)	-0.03 (0.06)	-0.03 (0.05)
Midwest	-0.12 (0.34)	0.29 (0.45)	-0.09 (0.25)	0.03 (0.02)+	0.01 (0.05)	0.03 (0.04)
Northeast	-0.61 (0.40)	-0.51 (0.60)	-0.20 (0.30)	0.02 (0.02)	-0.03 (0.05)	0.00 (0.05)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01.

Table B.32. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analyses Considering Variations in Links between Achievement and Physiological Health Outcomes across Racial/Ethnic Groups among non-Hispanic Black, Mexican, and non-Hispanic White Young Adults

	Diastolic Blood Pressure *n* =13,434 Coef (SE)	Systolic Blood Pressure *n* =13,434 Coef (SE)	Body Mass Index *n* =14,489 Coef (SE)	Epstein-Barr Virus Antibodies *n* =12,483 Coef (SE)	C-Reactive Protein Levels *n* =12,483 Coef (SE)	Allostatic Load *n* =11,960 Coef (SE)
Acadamic Achievement						
GPA	-0.12 (0.19)	-0.26 (0.28)	-0.27 (0.12)*	-0.01 (0.01)	-0.04 (0.03)	-0.03 (0.03)
College completion	-0.78 (0.32)*	-0.54 (0.38)	-1.29 (0.18)**	-0.01 (0.02)	-0.19 (0.04)**	-0.13 (0.04)**
Race/Ethnicity						
Black	0.66 (0.65)	1.53 (0.84)+	1.07 (0.51)*	0.12 (0.03)**	0.02 (0.07)	0.18 (0.09)*
Mexican	-0.10 (0.65)	0.21 (0.89)	1.54 (0.53)**	0.08 (0.04)*	0.25 (0.08)**	0.24 (0.06)**
Interactions						
GPA X Black	0.26 (0.42)	0.25 (0.61)	-0.02 (0.44)	0.00 (0.03)	-0.03 (0.08)	0.00 (0.07)
GPA X Mexican	0.83 (0.61)	1.60 (1.20)	-0.24 (0.53)	0.09 (0.04)*	0.02 (0.08)	0.05 (0.09)
College X Black	0.13 (0.63)	-0.62 (0.95)	1.80 (0.50)**	0.04 (0.04)	0.23 (0.11)*	0.34 (0.09)**
College X Mexican	-1.43 (1.06)	-0.44 (1.51)	2.66 (0.89)**	-0.03 (0.08)	0.49 (0.16)**	0.34 (0.12)**
Individual & Family Covariates						
Age	0.04 (0.01)**	0.02 (0.01)+	0.01 (0.01)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)*
Male	4.23 (0.23)**	9.30 (0.31)**	-0.36 (0.23)	-0.13 (0.02)**	-0.50 (0.03)**	0.24 (0.04)**
Low Birthweight	0.41 (0.53)	0.19 (0.68)	-0.44 (0.47)	0.04 (0.04)	0.02 (0.07)	0.04 (0.08)
Poor prior health	1.29 (0.51)*	2.50 (0.58)**	2.60 (0.57)**	0.06 (0.02)*	0.30 (0.06)**	0.26 (0.07)**
Pregnancy (at wave 4)	-- --	-- --	-- --	-0.11 (0.04)**	0.76 (0.06)**	-- --
Family SES	-0.27 (0.21)	-0.41 (0.33)	-0.52 (0.16)**	-0.03 (0.02)*	-0.07 (0.03)*	-0.08 (0.03)**
Parent single	0.66 (0.62)	0.51 (0.78)	0.31 (0.47)	0.07 (0.04)*	0.01 (0.08)	0.07 (0.08)
Parent divorced/separated	-0.06 (0.31)	-0.71 (0.39)+	-0.12 (0.27)	-0.01 (0.02)	-0.01 (0.04)	-0.03 (0.04)
School Covariates						
School avg GPA	0.48 (0.83)	1.22 (1.12)	0.11 (0.53)	-0.01 (0.04)	-0.09 (0.11)	0.01 (0.10)
School avg college completion	-0.75 (2.02)	-0.27 (2.58)	-1.78 (1.52)	0.01 (0.10)	0.14 (0.27)	-0.03 (0.25)
School avg family SES	-0.75 (1.00)	-1.03 (1.42)	-0.01 (0.78)	-0.04 (0.05)	-0.17 (0.14)	-0.18 (0.13)
School percent Asian	0.69 (1.97)	-0.71 (3.58)	-1.72 (2.22)	0.48 (0.22)*	-0.02 (0.62)	0.17 (0.37)
School percent Black	-1.18 (1.15)	-1.47 (1.52)	1.08 (0.80)	0.02 (0.05)	0.09 (0.13)	-0.06 (0.14)
School percent Latino	-4.28 (2.38)+	-0.98 (3.43)	4.22 (1.92)*	-0.35 (0.16)*	0.16 (0.40)	-0.23 (0.32)
Small school	0.10 (0.36)	0.21 (0.48)	0.34 (0.26)	0.00 (0.02)	-0.02 (0.05)	0.00 (0.04)
Large school	0.03 (0.36)	-0.01 (0.51)	-0.27 (0.24)	0.00 (0.02)	-0.08 (0.05)	-0.04 (0.04)
School has HS grades	0.36 (0.38)	0.59 (0.45)	0.74 (0.30)*	0.04 (0.02)	0.10 (0.06)+	0.15 (0.05)**
Urban	-0.15 (0.35)	-0.75 (0.48)	-0.38 (0.24)	0.01 (0.02)	0.00 (0.04)	-0.06 (0.04)+
Rural	0.02 (0.46)	0.11 (0.54)	0.36 (0.33)	0.00 (0.02)	0.07 (0.06)	0.02 (0.06)
West	-0.46 (0.42)	-0.58 (0.54)	-0.22 (0.37)	0.01 (0.02)	-0.03 (0.06)	-0.03 (0.05)
Midwest	-0.12 (0.34)	0.29 (0.44)	-0.10 (0.24)	0.03 (0.02)+	0.01 (0.05)	0.03 (0.04)
Northeast	-0.59 (0.39)	-0.51 (0.59)	-0.18 (0.30)	0.02 (0.02)	-0.02 (0.05)	0.01 (0.05)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01.

Table B.33. Summary of Coefficients and Standard Errors for Multilevel Ordinary Least Square Regression Analyses Considering School-wide Perceptions of Peer Prejudice as a Moderator of Links between Achievement and Physiological Health Outcomes across Racial/Ethnic Groups among non-Hispanic Black, Mexican, and non-Hispanic White Young Adults

	Diastolic Blood Pressure *n* =13,434 Coef (SE)	Systolic Blood Pressure *n* =13,434 Coef (SE)	Body Mass Index *n* =14,489 Coef (SE)	Epstein-Barr Virus Antibodies *n* =12,483 Coef (SE)	C-Reactive Protein Levels *n* =12,483 Coef (SE)	Allostatic Load *n* =11,960 Coef (SE)
Acadamic Achievement						
GPA	-0.18 (0.21)	-0.30 (0.31)	-0.28 (0.14)*	-0.01 (0.01)	-0.05 (0.03)	-0.04 (0.03)
College completion	-0.87 (0.35)*	-0.65 (0.38)+	-1.34 (0.20)**	-0.01 (0.02)	-0.18 (0.04)**	-0.13 (0.04)**
Race/Ethnicity						
Black	0.45 (0.65)	1.24 (0.84)	0.89 (0.52)+	0.11 (0.03)**	-0.01 (0.07)	0.15 (0.09)+
Mexican	-0.21 (0.60)	0.13 (0.82)	1.48 (0.54)**	0.08 (0.04)*	0.24 (0.08)**	0.23 (0.06)**
School Perceptions of Prejudice	1.41 (0.79)+	0.91 (1.32)	0.37 (0.51)	0.04 (0.04)	0.11 (0.10)	0.10 (0.09)
Two Way Interactions						
GPA X Black	0.30 (0.44)	0.26 (0.63)	-0.07 (0.48)	-0.01 (0.03)	-0.03 (0.08)	-0.01 (0.07)
GPA X Mexican	0.88 (0.62)	1.61 (1.24)	-0.26 (0.51)	0.09 (0.04)*	0.02 (0.09)	0.06 (0.09)
College X Black	-0.18 (0.65)	-1.11 (0.97)	1.63 (0.51)**	0.03 (0.04)	0.23 (0.11)*	0.30 (0.10)**
College X Mexican	-1.34 (1.06)	-0.31 (1.47)	2.70 (0.90)**	-0.02 (0.09)	0.48 (0.16)**	0.32 (0.12)**
Prejudice X Black	0.88 (1.28)	1.30 (1.67)	1.18 (0.97)	0.03 (0.07)	0.38 (0.19)*	0.26 (0.15)+
Prejudice X Mexican	4.42 (2.59)+	5.74 (3.62)	2.43 (1.75)	0.16 (0.17)	0.21 (0.27)	0.06 (0.32)
GPA X Prejudice	0.62 (0.60)	0.29 (0.81)	-0.07 (0.42)	-0.01 (0.04)	-0.01 (0.08)	0.01 (0.08)
College X Prejudice	-0.49 (0.93)	-0.52 (1.22)	-0.28 (0.55)	-0.01 (0.06)	-0.09 (0.11)	-0.13 (0.12)
Three Way Interactions						
GPA X Black X Prejudice	-0.92 (1.46)	-0.69 (2.03)	-0.75 (1.33)	-0.03 (0.08)	-0.20 (0.23)	-0.26 (0.20)
GPA X Mexican X Prejudice	6.05 (3.57)	3.60 (5.02)	2.00 (2.76)	0.01 (0.23)	0.13 (0.51)	0.37 (0.53)
College X Black X Prejudice	-2.54 (2.34)	-3.89 (3.31)	-1.69 (1.39)	-0.09 (0.14)	0.00 (0.24)	-0.15 (0.28)
College X Mexican X Prejudice	-2.56 (6.16)	2.33 (7.07)	-0.91 (3.39)	0.12 (0.45)	0.13 (0.87)	0.13 (0.77)

Note: Coef= Coefficient; SE= Standard Error; + p <.10, * p <.05, ** p <.01. All covariates listed in Tables B.31 and B.32 are also included in these models.