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Racial Differences in Coping as a Mediating Pathway from Childhood Adversity to Adult Health

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Abstract
People who experience adversity early in life are vulnerable to psychological and physical health problems across the lifespan. Although some evidence indicates that coping style mediates this long-term association, it is not known whether these relationships generalize to Black Americans. This study examined whether coping style plays an intermediary role between adverse childhood experiences and adult health, and if there are Black and White differences among these relationships. Data ($N = 3680$) were drawn from the Midlife in the United States (MIDUS) Refresher and Milwaukee Refresher projects. Using model-based Bayesian imputation, moderated mediation models were estimated. Estimates of the indirect pathways from adversity to six distinct measures of adult health via coping style were obtained separately by race. A key finding was that for Black participants, early adversity was consistently associated with increased emotion-focused coping which in turn was associated with poorer health outcomes. This result was discussed considering the divergent experiences of Black and White individuals in the United States.

Keywords Early adversity · Coping · Health · Racial differences

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Adversity occurring early in life has long-reaching detrimental effects on physical and mental health. Although multiple pathways play a role in transmitting the harmful effects of early adversity to adult health (Nurius et al., 2018; Solberg et al., 2023), coping strategies have received little attention. This mediating pathway may be particularly important because coping strategies are learned and hence, amenable to change. However, there are racial differences that have not been explored; specifically, in the United States, Black individuals generally report higher rates of childhood adversity as well as poorer physical health outcomes than White individuals (Merrick et al., 2019; Solberg et al., 2022). Hence, the purpose of the present study was to explore coping as a pathway connecting early adversity with adult health, specifically testing racial differences.

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The original adverse childhood experiences (ACE) study demonstrated that exposure to hardship during childhood and adolescence has lasting effects on health (Felitti et al., 1998). Based on a sample of community-dwelling adults enrolled in a large health maintenance organization, the study asked participants about events that occurred during their first 18 years of life including exposure to psychological, physical, or sexual abuse, or exposure to household dysfunction such as substance abuse, mental illness, violence or incarceration. The key finding was a strong graded relationship between the breadth of exposure to adversity and health problems as an adult, including heart disease, cancer, chronic lung disease, skeletal fractures, and liver disease.

Subsequent work has replicated the ACE study and identified processes linking adversity and later health. Behaviorally, persons with a history of adversity are more likely to smoke, drink alcohol excessively, maintain a sedentary lifestyle, and engage in sexual promiscuity (Campbell et al., 2016; Loxton et al., 2021). Physiologically, frequent, and/or prolonged activation of the body's stress response systems eventually inflicts wear and tear on the body, and also interferes with effective responding to new stressors (McLaughlin, 2018; Shonkoff et al., 2009). Other mediators connecting childhood adversity and adult health include increased

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exposure to stress during adulthood, diminished interpersonal relationships and psychosocial resources, psychological distress, poor sleep quality, and low socioeconomic status (Nurius et al., 2018; Tracy et al., 2021; Umberson et al., 2014).

An additional mechanism linking adversity with health may be coping strategies. Coping refers to the ways that people attempt to manage the demands of stressful events that are appraised as taxing or exceeding one's resources (Lazarus & Folkman, 1984). Coping strategies are often broadly categorized based on their intended functions; *problem-focused coping* (PFC) entails confronting the stressor directly and taking action to resolve the underlying cause, and *emotion-focused coping* (EFC) attempts to reduce, eliminate, or manage the emotional response to the stressor (Lazarus & Folkman, 1984). In general, EFC tends to be associated with poorer physical health outcomes. For example, people who primarily used EFC showed lower medication adherence (Weaver et al., 2005), increased physical symptoms (Torkelson & Muhonen, 2003), greater pain (Rosenberger et al., 2004), and more chronic conditions (Sheffler, 2019). Although findings are less consistent in regard to PFC, taking steps to directly manage stress has been associated with more positive physical health outcomes. For example, PFC was associated with reduced pain and symptoms in fibromyalgia patients (Ragini et al., 2014), reduced decline in overall health during the first year of medical school (Park & Adler, 2003), more vigorous cellular immune response (Stowell et al., 2001), and fewer chronic health conditions (Sheffler, 2019).

Exposure to hardship early in life has been associated with more frequent use of emotion-focused strategies and less frequent use of PFC (Beutel et al., 2017; Leitenberg et al., 2004; Ullman et al., 2014). Mounting evidence suggests that continued exposure to ACEs sensitizes the brain's threat-detecting neural circuitry, resulting in heightened vigilance for danger, elevated appraisal of threat, and disrupted emotion regulation processes (Danese & McEwen, 2012; Nusslock & Miller, 2016). Emotion-focused strategies may evolve into the preferred (and eventually habitual) approach as people with a history of harsh upbringing temper this elevated affective response to stressors (Danese & McEwen, 2012). Further, the development of PFC strategies may be disrupted in children who are exposed to many ACEs without adequate support (Cicchetti & Bendezú, 2023).

Despite the evidence that childhood adversity may influence coping style, to date, only limited research has explored coping as a mediator between ACEs and health outcomes. Several studies have found a significant indirect effect of ACEs on various mental health outcomes via EFC (Sheffler et al., 2019; Solberg et al., 2023; Su et al., 2020). Fewer studies have specifically examined physical health outcomes, but EFC was found to mediate the relationship between early adversity and chronic conditions in adulthood (Sheffler et al., 2019), as well as the relationship between exposure to maltreatment and physical health concerns (Hager & Runtz, 2012). PFC did not mediate the link between childhood adversity and chronic conditions in adulthood (Sheffler et al., 2019).

Given the divergent experiences of people in the United States based on racial background, it is reasonable to ask whether people from minority backgrounds are differentially affected by adversity and coping strategies. Substantial evidence shows that Black children are exposed to more adversity than White children (Felitti et al., 1998; Maguire-Jack et al., 2020; Solberg et al., 2023), and at least some of this discrepancy can be traced to institutionalized racism. For example, residential segregation by race has resulted in neighborhoods with higher levels of economic insecurity, inferior housing, and higher rates of violence relative to similar income neighborhoods with higher proportions of White Americans (Williams & Collins, 2001). As another example, Black children are more likely to experience incarceration of a parent than White children (Solberg et al., 2022), a discrepancy almost certainly linked with race-based inequalities in surveillance, prosecution, and sentencing (Wildeman & Wang, 2017). In addition, health is generally poorer for Black Americans. For example, the most recent data from the National Center for Health Statistics showed that life expectancy for Black people was 3.9 years lower than that of White people, a difference attributed to higher death rates for heart disease, cancer, homicide, diabetes, and perinatal conditions for the Black population (Gindi, 2021). Black infant deaths per 1,000 live births were more than double the rate among White infants (Gindi, 2021). Importantly, these disparities are based on racial self-identification as Black or White, suggesting that the large observed differences are due to socially constructed systems rather than genetic differences between groups (Braun, 2002).

Few studies have systematically evaluated Black and White differences in coping, and findings have been mixed. One of the most consistent findings is that Black individuals are more likely to use religious practices such as prayer as coping methods (Gemmell et al., 2016; Jones et al., 2008; Meints et al., 2016). Some studies have found that relative to White people, Blacks use more coping strategies overall, including both problem-focused and emotion-focused strategies (Bautista, 2013; Plummer & Slane, 1996). For example, a meta-analysis of pain coping strategies concluded that Black individuals use coping strategies more frequently overall, but tended to rely on praying and catastrophizing, both of which have been linked with poorer pain outcomes (Meints et al., 2016). On the other hand, some studies have reported few or no differences in overall use or type of coping strategies (Brantley et al., 2002; Jones et al., 2008).

Another racial difference in coping involves the effects of health behavior. Despite facing inequalities in employment, income, and educational opportunities, Blacks experience rates of most major psychological disorders that are the same or lower than Whites (Breslau et al., 2006). It has been proposed that unhealthy behaviors such as eating to cope, using alcohol, or smoking may buffer the effects of chronically stressful environments on mental health (Jackson et al., 2010), while simultaneously increasing risk for physical health problems. In support of this idea, data from a national probability sample showed that stressors were positively associated with major depression for both White and Black respondents, but this relationship was actually weaker for Black respondents who engaged in unhealthy behaviors including smoking, drinking alcohol, and carrying excess weight (Jackson et al., 2010).

Theoretical Perspective: The Life-Span Approach and the Law of Small Effects

One of the key tenets of the lifespan perspective (Baltes, 1987; Fingerman et al., 2010) is that development is lifelong. Events occurring early in life can alter the developmental trajectory in ways that are carried forward into adulthood. For example, the foundation for lifelong health is built in childhood. Positive experiences throughout the early years support the development of biological systems but exposure to adversity can alter the trajectory of health in detrimental ways, including the development of coping strategies (Nusslock & Miller, 2016; Taylor & Stanton, 2007).

The lifespan perspective also emphasizes the importance of context. Because development is ongoing, current context can either amplify or mitigate the direct and indirect effects of early adversity. This tenet dovetails with the *law of small effects* (Jackson et al., 2011), which postulates that there is no one single factor that produces observed racial disparities. Rather, small effects accumulate over the life span, resulting in measurable differences in health outcomes by mid or late life. These small effects include a wide range of factors, potentially including genetic and epigenetic effects, racial discrimination, lifestyle factors, adverse events, and coping style. The law of small effects proposes that none of these factors can produce health disparities on their own, but synergistically they can produce the consistent differences that are observed between Blacks and Whites in the United States.

From both historic and current perspectives, the social conditions experienced by Black and White populations in the United States differ substantially (Blank et al., 2004), and these different contexts may moderate the effects of childhood adversity and habitual coping style. Although socioeconomic status accounts for a substantial portion of these differing circumstances, racial discrimination has a persistent adverse impact on the health of Black individuals above and beyond the effects of SES (Phelan & Link, 2015). Racism is often experienced as a stressor, and consistent with Lazarus and Folkman's model (1984), the target of racism must engage coping strategies to manage the demands of the stressor. Because racial discrimination is uncontrollable, unpredictable, and elicits feelings of psychological distress (Clark et al., 1999; Paradies et al., 2015; Williams & Mohammed, 2009), people who are targets of discrimination may be more likely to engage in EFC. Over time, ongoing perceptions of racism combined with this more passive style of coping may have a negative impact on health. A history of childhood adversity may interact with perceptions of racism to further elevate the tendency to engage in EFC.

The Present Study

The purpose of the present study was to test coping style as a mediator between childhood adversity and six measures of adult health, conditional on self-identification as either Black or White. Based on recommendations to treat physical health as a multidimensional construct (Patrick & Erickson, 1993), we employed six different measures of adult health that have been used extensively in health research, including self-rated health, functional limitations, absenteeism due to health, somatic amplification, chronic conditions, and dyspnea (shortness of breath). Based on previous research (e.g., Leitenberg et al., 2004; Ullman et al., 2014), we hypothesized that exposure to hardship in childhood would be associated with increased EFC and decreased PFC. Also based on previous research (e.g., Sheffler, 2019), we hypothesized that PFC would be related to better health outcomes and EFC would be related to poorer health outcomes. Finally, based on the lifespan perspective and the law of small effects, we hypothesized that both these direct associations and the mediating effects of coping style on health outcomes would be conditional on racial identity.

Method

Sample

Data for this study were obtained from the Midlife in the United States (MIDUS) Refresher (MR) and Milwaukee Refresher (MKER) projects conducted in 2011–2014. These projects were intended to replenish the original MIDUS 1 project, a national longitudinal study designed to explore health and well-being across adulthood. The MR study ($n = 3577$) recruited a national probability sample designed to demographically match the original MIDUS cohort in terms of age (25 to 74 years), gender, and educational attainment. Participants were recruited into the study via an initial

45-min telephone interview and were invited to complete a mailed self-administered questionnaire and a telephone interview. The MKER sample ($n = 508$) was not nationally representative but instead included an over-sample of African American adults residing in Milwaukee, WI. Milwaukee respondents were interviewed in their homes using a Computer Assisted Personal Interview (CAPI) protocol and a self-administered questionnaire. The sample for the present study ($N = 3680$) was restricted to participants who identified as White or Black in response to the question, "What are your main racial origins—that is, what race or races are your parents, grandparents, and other ancestors?" Response choices included White, Black, and/or African American, Native American or Alaska Native Aleutian Islander/Eskimo, Asian, Native Hawaiian or Pacific Islander, Other. Relevant data from MR were merged with data from MKER; no weighting procedures were used.

MIDUS data collection has been reviewed and approved by the Education and Social/Behavioral Sciences and the Health Sciences Institutional Review Boards at the University of Wisconsin-Madison. Written informed consent was obtained from all participants. Data are completely deidentified and are available through the Inter-University Consortium for Political and Social Research. Restrictions apply to the availability of these data, which were used with permission for the current study. The present study was deemed exempt from institutional review.

Measures

Physical Health

We used six measures of physical health: self-reported physical health, functional limitations, absenteeism due to physical health, chronic conditions, somatic amplification, and shortness of breath. Self-reported physical health was assessed by the following item: "Using a scale from 0 to 10 where 0 means 'the worst possible health' and 10 means 'the best possible health,' how would you rate your health these days?". Scores ranged from 0 to 10, with higher scores indicating better health. Self-rated health is one of the most frequently used indices of health and it has been consistently linked to a range of objective health outcomes across socioeconomic groups (Benyamini, 2011).

Functional limitations were assessed by asking participants to indicate on a four-point scale (1 = *a lot*, 4 = *not at all*) the extent to which their health limited seven basic activities of daily living. Sample items were "lifting or carrying groceries" and "climbing several flights of stairs." Scores were reverse-coded so that higher scores reflected a greater difficulty in performing the activities, then averaged across the seven items. The composite scale was computed for cases that had at least one valid response. Coefficient alpha for this measure was 0.93. The inability to carry out basic activities of daily living has been shown to predict a variety of negative health outcomes, including mortality (Weiner et al., 1990).

Absenteeism due to health was assessed by asking participants, "In the past 30 days, how many days were you completely unable to go to work or carry out your normal household work activities because of your physical or mental health?", followed by, "How many of those days were due only to your physical health?" A meta-analysis found that self-reported absenteeism is frequently used in health research and provides acceptable test–retest reliability and validity (via rank-order correlations with organizational records; Johns & Miraglia, 2015).

Chronic conditions were assessed by asking respondents, "In the past twelve months, have you experienced or been treated for any of the following?" Following this question, a list of conditions was presented. Sample items included arthritis, recurring stomach trouble, and high blood pressure. The total number of 'yes' responses was summed for cases that had at least one valid response to the list of chronic conditions. Increasing numbers of chronic conditions have a robust negative impact on overall health status and health-related quality of life (Heyworth et al., 2009).

Somatic amplification (experiencing bodily sensations as intense, noxious, and disturbing) was assessed with five items (e.g., "I am often aware of various things happening within my body") that respondents rated on a scale ranging from 1 (*not at all true*) to 4 (*extremely true*). Somatic amplification has been associated with increased severity of physical symptoms (Barrineau et al., 2014). Coefficient alpha for this scale was 0.54.

Shortness of breath (dyspnea) was assessed by asking, "Do you get short of breath in the following situations?" The situations included: "when hurrying on ground level or walking up a slight hill," "when walking with other people your age on level ground," "when walking at your own pace on level ground," and "when washing or dressing." The composite variable was based on the number of 'yes' answers and higher scores indicated greater progressive levels of dyspnea. The scale was not calculated for cases that had missing data for any of the items. Shortness of breath is often a marker of a serious health problem and is thought to be the single most important symptom that influences an individual's functioning on a day-to-day basis (Mahler & Wells, 1988).

Adverse Childhood Experiences (ACE)

We used the measure of adverse child experiences developed by Danielson and Sanders (2018) based on existing questions in the MIDUS data. The measure is the sum of dichotomized "yes" responses across eight forms of adversity

occurring before age 18: did not live with both biological parents up until age 16, lived with someone with substance abuse problems, family experienced financial distress, family moved frequently, experienced sexual assault, emotional abuse, physical abuse, or neglect. Scores range from 0 to 8 with higher scores indicating exposure to more forms of adversity. Factor analysis of this measure revealed two factors consistent with the standard ACE study: household dysfunction and abuse/neglect (Fellitti et al., 1998). Convergent validity was demonstrated via significant correlations with chronic conditions in late life and life satisfaction (inverse).

Coping Style

Items from the COPE Inventory (Carver et al., 1989) were used to assess dispositional coping style. The original COPE Inventory consists of 15 subscales; six of these were included in the MIDUS survey. Some subscales were excluded because they overlapped with other measures in the survey (such as religious coping or substance abuse), or because they exhibited low internal consistency. The items administered on the MIDUS survey are categorized as either emotion-focused or problem-focused; this dichotomous conceptualization has been empirically supported (Solberg et al., 2021) and substantial research has employed this approach (e.g., Sheffler et al., 2019; Woo et al., 2024).

PFC was assessed by asking participants to indicate "what you usually do when you experience a stressful event" with the following subscales: Positive Reinterpretation and Growth (e.g., "I try to grow as a person as a result of the experience"), Active Coping (e.g., "I concentrate my efforts on doing something about it"), and Planning (e.g., "I try to come up with a strategy about what to do"). Each subscale comprised four items for a total of 12 items. Coefficient alpha for the PFC scale was 0.90.

EFC was assessed with the following subscales: Focus on and Venting of Emotion (e.g., "I get upset and let my emotions out"), Denial (e.g., "I refuse to believe that it has happened"), and Behavioral Disengagement (e.g., "I admit to myself that I can't deal with it, and quit trying"). Each subscale consisted of four items for a total of 12 items. Coefficient alpha for the EFC scale was 0.85.

Participants responded to each of the coping items using a scale ranging from 1 (*a lot*) to 4 (*not at all*) and values were summed to create the relevant scales. Items were reverse-coded so that high scores reflect higher standing in the scale. If a scale was missing an item, the mean value of completed items was imputed; item-level missingness was very low.

Control Variables

Demographic variables included age (continuous), sex (0 = *male*, 1 = *female*), education (ranged from 1 = *no school or some grade school* to 12 = *doctoral degree*), household income (continuous), and partner status (0 = *not currently married or cohabiting*, 1 = *married or cohabiting*). Health behaviors such as smoking or alcohol abuse were not included due to high rates of missing data.

Analytic Strategy

We conducted a moderated mediation analysis with PFC and EFC as mediators between childhood adversity and adult health. We tested racial identity as a moderator of the pathways from adversity to coping (problem-focused or emotion-focused), and from each type of coping to adult health. Estimates of the indirect pathways from adversity to adult health via coping style were obtained separately by race.

The moderated mediation analyses were performed with Blimp 3.0 (Keller & Enders, 2021). This software uses model-based Bayesian multiple imputation to estimate the model parameters iteratively. Parameters are viewed as random variables with a distribution of plausible values given the information in the observed data. Blimp assumes that data are missing at random, conditional on the observed data in the model.

Linear regression models assume residuals are normally distributed and this assumption was not met for the following outcome variables: functional limitations, absenteeism due to health, and dyspnea. However, recent work has demonstrated that this assumption is vigorously robust, and even extremely non-normal distributions yield reliable *p* values, especially when sample size is large (Knief & Forstmeier, 2021).

Results

Descriptive statistics, percentage of cases with missing data, and tests of significance for racial differences are presented in Table 1. Relative to White participants, Black participants reported more ACEs, higher rates of both PFC and EFC, and poorer health across all health measures. Black participants were younger, less educated, more likely to be female and unpartnered relative to White participants. They also reported lower income.

Intercorrelations among study variables and control variables are presented in Table 2, separately by racial identity. There was a significant correlation between the number of ACEs in childhood and each measure of adult health. Adverse childhood experiences showed a significant positive correlation with EFC and for Black participants only, ACEs showed a significant negative correlation with PFC. PFC was generally related to better health outcomes (the only exception was somatic amplification which showed a

Table 1 Descriptive Statistics by Racial Identity and Missingness Rates

Variable	Mean (SD)				
	White $n=2945$	Black $n=735$	t	p	Percent Missing
1. Total ACEs	1.26 (1.51)	2.06 (1.56)	− 12.79	< .001	0
2. Problem-focused coping	37.86 (6.05)	39.48 (6.47)	− 5.71	< .001	29.78
3. Emotion-focused coping	21.56 (5.70)	23.67 (8.03)	− 6.59	< .001	29.81
4. Self-rated health	7.32 (1.68)	6.82 (2.06)	5.53	< .001	28.45
5. Functional limitations	1.75 (0.89)	1.93 (1.01)	− 4.46	< .001	23.12
6. Absenteeism	1.73 (5.67)	3.55 (7.84)	− 7.20	< .001	0.43
7. Somatic amplification	2.38 (0.53)	2.65 (0.65)	− 10.75	< .001	23.23
8. Chronic conditions	2.81 (3.02)	3.21 (3.54)	− 2.82	.002	24.13
9. Shortness of breath	0.48 (0.91)	0.86 (1.30)	− 8.55	< .001	22.88
10. Age	51.32 (14.43)	44.53 (12.72)	11.76	< .001	0
11. Education	7.84 (2.49)	6.38 (2.53)	14.20	< .001	0.16
12. Income	53,000.77 (49,997.81)	31,825.01 (31,796.68)	9.97	< .001	14.13
	Percentage		X^2	p	
13. Female	50.22	58.6	16.70	< .001	0
14. Married or cohabiting	71.41	37.3	299.59	< .001	0

nonsignificant correlation) and EFC was generally related to poorer health outcomes.

Results of the moderated mediation analyses are summarized in Figs. 1, 2, and 3 and Table 3. The figures present unstandardized coefficients for each of the pathways of interest in the models, net the effects of age, gender, education, income, and partner status. Childhood adversity, PFC, and EFC were mean-centered. Table 3 presents the indirect effects of PFC and EFC on health outcomes, separately by racial identity, and controlling for age, gender, education, income, and partner status.

Self-Rated Health

For self-rated health, the pathways from childhood adversity to coping were nonsignificant, indicating that for White participants, early adversity was not associated with rates of either type of coping. Black participants used significantly more PFC ($b=2.58$) but as adversity increased, they used significantly less PFC ($b=$-0.36) and more EFC ($b=0.38$). Hence, the slope term from adversity to PFC was $b=0.01$ for White participants, but $b=$-0.37 for Black participants, and the slope term from adversity to EFC was $b=0.15$ for White participants and $b=0.53$ for Black participants. Pathways from type of coping to self-rated health were not moderated by racial identity. Coping style did not mediate the relationship between childhood adversity and health for White participants, but for Black participants, there were significant negative indirect effects via both PFC and EFC. The model explained 12.7% of the variability in self-rated health.

Functional Limitations

For functional limitations, none of the model paths involving coping style were conditional on racial identity. However, the indirect effects of adversity via both PFC and EFC were positive and significant for Black participants. The model explained 24.5% of the variability in functional limitations.

Work Absenteeism due to Physical Health

For work absenteeism due to physical health reasons, childhood adversity showed significant associations with coping, but only for Black participants. Specifically, the

Table 2 Intercorrelations Separately by Racial Identity

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. ACEs	–	− .12*	.14*	− .16*	.08*	.14*	.16*	.13*	.14*	− .10	.06	− .15*	− .14*	.06
2. Problem-focused coping	− .02	–	− .11*	.16*	− .17*	− .18*	.01	− .13*	− .10*	− .04	.00	.18*	.14*	.04
3. Emotion-focused coping	.08*	− .24*	–	− .26*	.19*	.19*	.22*	.20*	.29*	− .12*	− .01	− .36*	− .33*	.07
4. Self-rated health	− .15*	.23*	− .17*	–	− .49*	.38*	− .13*	− .49*	− .48*	− .13*	.03	.21*	.17*	.02
5. Functional limitations	.16*	− .14*	.19*	− .54*	–	.40*	.23*	.53*	.59*	.26*	.14*	− .26*	− .20*	.07
6. Absenteeism	.13*	− .07*	.13*	− .36*	.43*	–	.25*	.49*	.42*	.05	.00	− .22*	− .17*	.02
7. Somatic amplification	.11*	.04	.26*	− .12*	.19*	.12*	–	.23*	.24*	− .00	.21*	− .18*	− .17*	.11
8. Chronic	.19*	− .10*	.23*	− .41*	.48*	.23*	.25*	–	.53*	.27	.09	− .19*	− .12*	.01
9. Dyspnea	.14*	− .19*	.20*	− .44*	.59*	.27*	.19*	.39*	–	.17*	.11*	− .24*	− .19*	.04
10. Age	− .02	.01	− .01	− .01	.34*	.02	.03	.17*	.16*	–	− .03	.01	.14*	− .11*
11. Female	.07*	.04	.20*	.01	.18*	.05*	.23*	.16*	.13*	− .03	–	.17*	− .13	.26
12.Education	− .12*	.16*	− .15*	.19*	− .26*	− .15*	− .10*	− .15*	− .23*	− .06*	− .03	–	.45*	− .07
13. Income	− .10*	.11*	− .20*	.14*	− .23*	− .16*	− .18*	− .19*	− .20*	.01	− .39*	.39*	–	− .16*
14. Partner	.03	− .01	.12*	− .13*	.21*	.12*	.09*	.15*	.15*	.11*	.21*	− .09*	− .15*	–

Values above the diagonal are for Black participants; values below the diagonal are for White participants

*$p < .05$

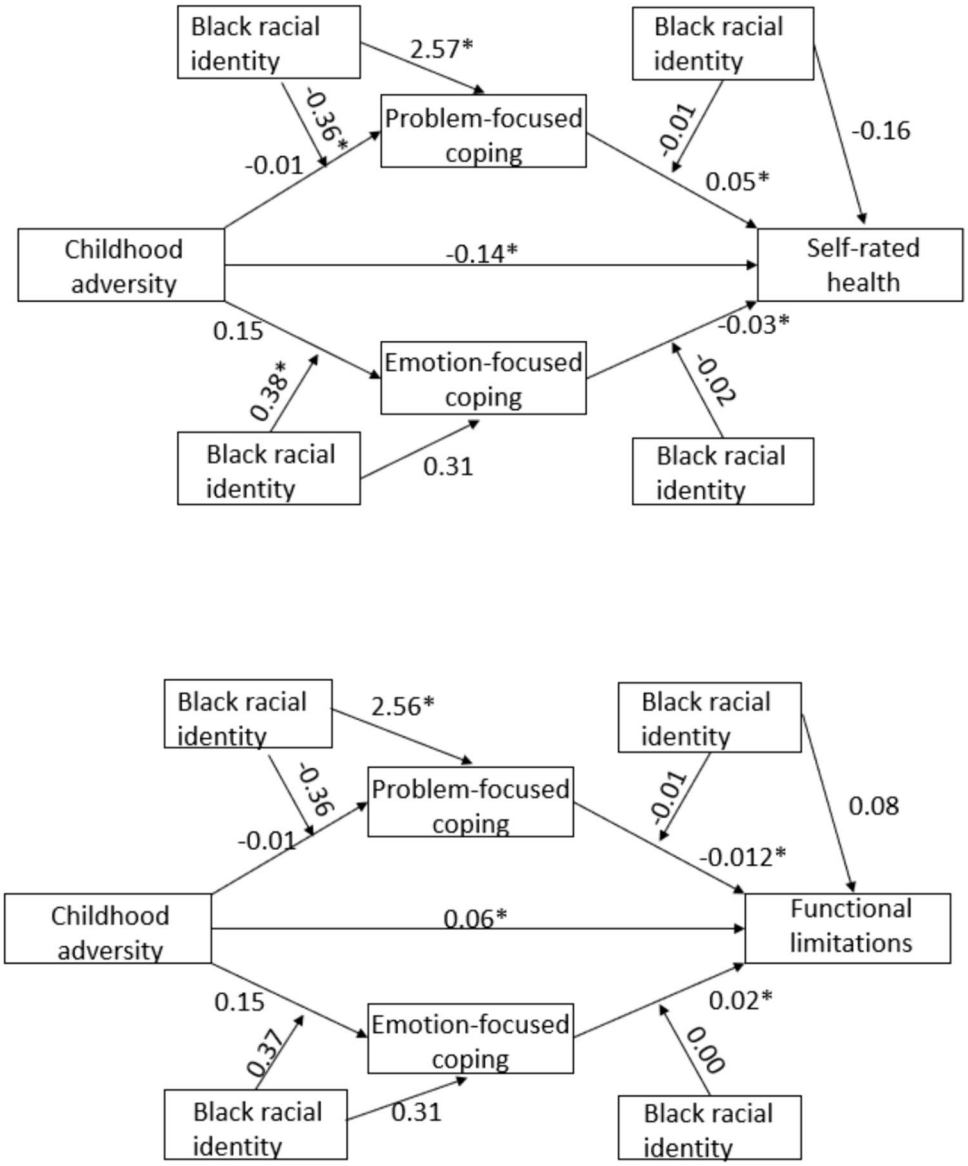

Fig. 1 Path Models from Childhood Adversity to Self-Rated Health or Functional Limitations via Coping Style as a Function of Black Racial Identity. Values presented are unstandardized coefficients. Covariates (age, gender, education, income, and partner status) were included in the model but are not presented for brevity. *p < .05

path from childhood adversity to EFC was $b = 0.15$ for White participants and $b = 0.53$ for Black participants, and the path to PFC was $b = -0.01$ for White participants and $b = -0.39$ for Black participants. Racial identity moderated the direct effects of coping on absenteeism. Specifically, PFC was significantly related to reduced absenteeism for Black participants ($b = -0.24$) but not White participants ($b = -0.01$), and the direct effect of EFC on increased absenteeism was $b = 0.08$ for White participants but was significantly greater for Black participants ($b = 0.17$). Coping style did not mediate the relationship between adversity and absenteeism for White participants, but there was a significant positive indirect effect of adversity via both coping styles on absenteeism for Black participants. The model explained 9.5% of the variability in absenteeism.

Somatic Amplification

For somatic amplification, the effect of childhood adversity on both forms of coping was conditional on racial identity. The slope term from adversity to PFC was $b = -0.01$ for White participants and $b = -0.38$ for Black participants, and the slope from adversity to EFC was $b = -0.15$ for White participants and $b = -0.54$ for Black participants. Emotion-focused coping had a significant positive mediating effect on somatic amplification, but only for Black participants; none of the other indirect effects were significant. The model explained 15.0% of the variability in somatic amplification.

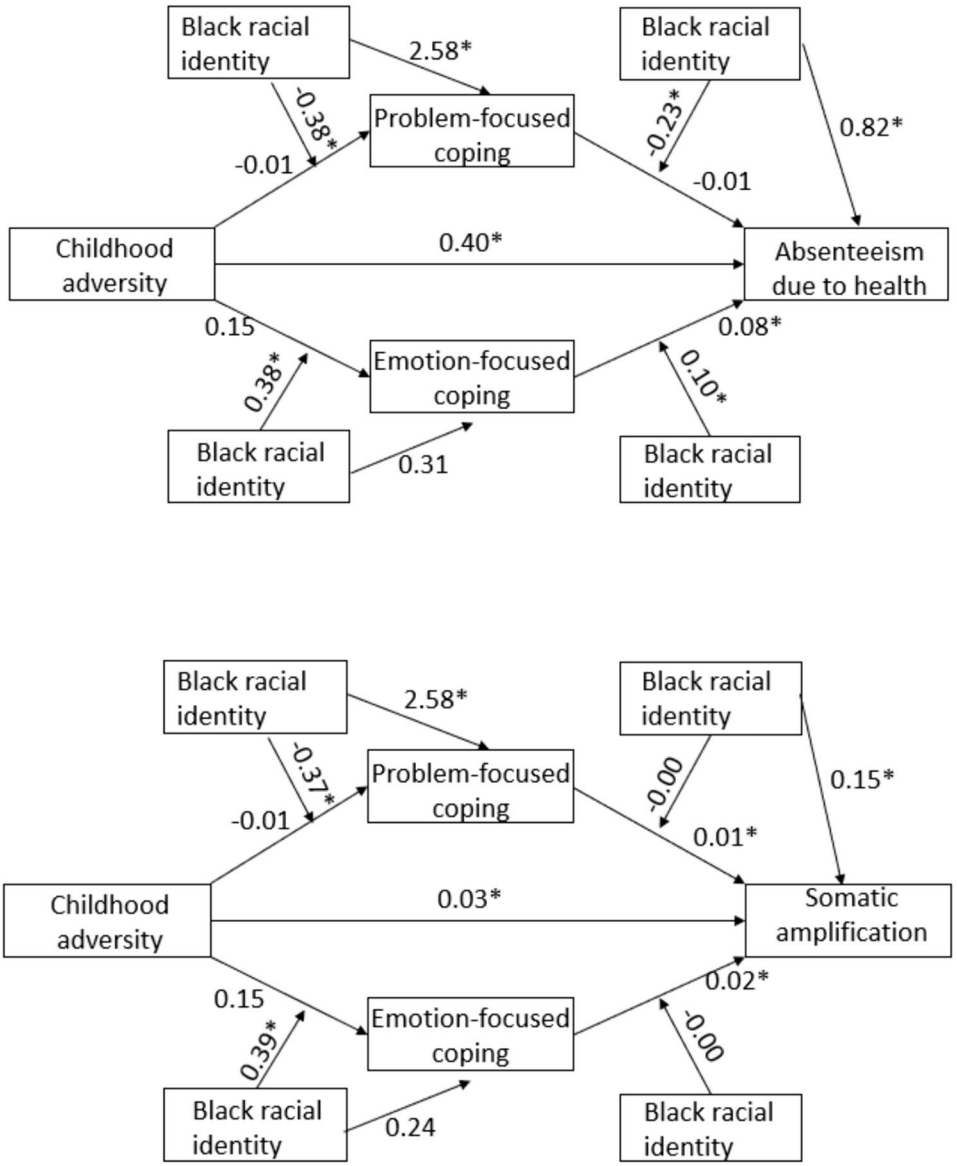

Fig. 2 Path Models from Childhood Adversity to Absenteeism or Somatic Amplification via Coping Style as a Function of Black Racial Identity. Values presented are unstandardized coefficients. Covariates (age, gender, education, income, and partner status) were included in the model but are not presented for brevity. *p < .05

Chronic Conditions

For chronic conditions, childhood adversity was associated with increased EFC ($b = 0.15$) and this increase was greater for Black participants, ($b = 0.54$). The pathway from childhood adversity to PFC was nonsignificant for White participants ($b = 0.00$) but significant for Black participants ($b = -0.39$). Adversity had a significant, positive indirect effect via EFC on chronic conditions for Black participants. PFC did not have a significant mediating effect. The model explained 14.9% of the variability in chronic conditions.

Shortness of Breath (Dyspnea)

Finally, for shortness of breath (dyspnea), racial identity moderated the effects of adversity on coping style, and the effect of EFC on dyspnea. Specifically, the slope term from childhood adversity to PFC was $b = -0.01$ for White participants and $b = -0.40$ for Black participants. Adversity was associated with increased EFC ($b = 0.15$), with a greater increase for Black participants ($b = 0.58$). EFC had a positive effect on dyspnea ($b = 0.02$) with a stronger effect for Black participants ($b = 0.05$). The only significant indirect effect was via EFC, which was significant only for Black participants.

Discussion

Previous work has shown that hardship experienced early in life has a long-reaching effect on adult health. The present study sought to test the mediating role of coping style and

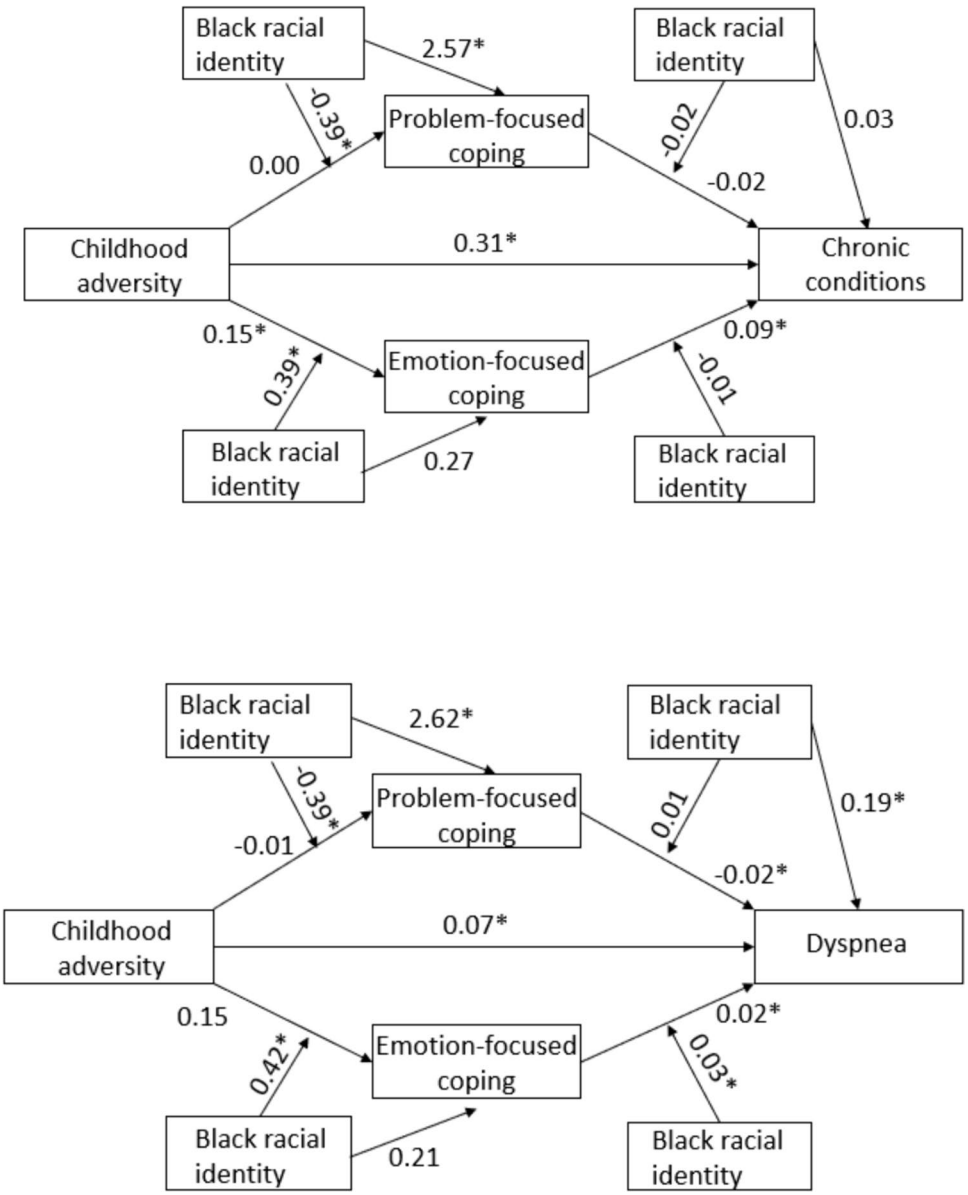

Fig. 3 Path Models from Childhood Adversity to Chronic Conditions or Dyspnea via Coping Style as a Function of Black Racial Identity. Values presented are unstandardized coefficients. Covariates (age, gender, education, income, and partner status) were included in the model but are not presented for brevity. *p < .05

whether these mediational relationships depended on racial self-identity as either Black or White. We used six different aspects of health in adulthood and instead of discussing each individual finding, this discussion will center on overarching themes.

Our central hypothesis was that coping style would mediate the relationship between early adversity and adult health. The mediating role of EFC was consistently supported for Black participants. That is, the more adversity a Black person experienced, the more EFC that person employed, which in turn was related to poorer health outcomes. This racial difference can perhaps be attributed to the lower socioeconomic standing and greater stress exposure (including perceived racial discrimination) experienced by Black Americans (Louie & Wheaton, 2019; Taylor & Turner, 2002; Umberson et al., 2014). It has been shown that childhood adversity sensitizes neural circuitry involved in threat vigilance (Nusslock & Miller, 2016); perhaps this heightened attention to potential dangers interacts with ongoing disadvantage and discrimination such that Black individuals engage in EFC more frequently as a way of managing the negative emotions associated with perceived threat. Further, people tend to use more EFC when events are perceived as beyond personal control (Endler et al., 2000) and Black individuals in the United States generally report lower control beliefs (Kang et al., 2013; Zahodne et al., 2017). This racial difference has been attributed to inequalities in the distribution of resources across multiple social systems, including housing, education, healthcare, and criminal justice, as perceptions of exclusion or injustice can undermine feelings of control (Assari, 2018).

Table 3 Summary of Moderated Mediation Results for Adversity Predicting Health via Coping Style by Racial Identity

Dependent variable	White participants		Black participants	
	Conditional indirect effect via problem-focused coping (SD) [95% CI]	Conditional indirect effect via emotion-focused coping (SD) [95% CI]	Conditional indirect effect via problem-focused coping (SD) [95% CI]	Conditional indirect effect via emotion-focused coping (SD) [95% CI]
Self-rated health	− 0.000 (0.004) [− 0.008, 0.008]	− 0.004 (0.002) [− 0.010, 0.000]	− 0.013* (0.008) [− 0.033, − 0.001]	− 0.027* (0.011) [− 0.050, − 0.009]
Functional limitations	0.000 (0.001) [− 0.002, 0.002]	0.002 (0.001) [− 0.000, 0.005]	0.006* (0.004) [0.001, 0.016]	0.008* (0.004) [0.002, 0.018]
Absenteeism	0.000 (0.002) [− 0.005, 0.005]	0.010 (0.008) [− 0.001, 0.029]	0.089* (0.046) [0.015, 0.190]	0.088* (0.035) [0.030, 0.166]
Somatic amplification	− 0.000 (0.001) [− 0.002, 0.002]	0.003 (0.002) [− 0.000, 0.007]	− 0.002 (0.002) [− 0.006, 0.002]	0.009* (0.003) [0.003, 0.017]
Chronic conditions	0.00 (0.002) [− 0.004, 0.004]	0.014 (0.008) [− 0.001, 0.028]	0.015 (0.012) [− 0.000, 0.045]	0.043* (0.017) [0.016, 0.080]
Dyspnea	0.000 (0.002) [− 0.003, 0.003]	0.002 (0.002) [0.000, 0.006]	0.004 (0.004) [− 0.001, 0.013]	0.026* (0.009) [0.010, 0.045]

Hence, it may be that that both past adversity and present stress are viewed as uncontrollable, suggesting that for Black Americans, EFC is the more logical strategy.

However, even if EFC is a reasonable approach in this context, EFC was associated with poorer health outcomes and this effect was amplified for Black participants in the models for absenteeism and dyspnea. We speculate that EFC is a maladaptive approach in the context of employment. Rather than seeking concrete solutions, this coping style adopts a more passive approach and endorses withholding effort to deal with a problem. Some research has shown that Black workers are systematically segregated into occupations with disproportionate Black representation; these positions are then perceived as less valuable with correspondingly lower pay (Huffman & Cohen, 2004). Considering the lower status of such positions (Penner, 2008), withholding effort may manifest outwardly as missing work altogether. Regarding dyspnea, shortness of breath is exacerbated by a sense of uncontrollability (Calfee et al., 2006). Because EFC does not directly attempt to solve problems, a reliance on this coping style, combined with social conditions that may be perceived as uncontrollable, may reduce one's sense of control and in turn, increase shortness of breath symptoms.

Prior research has shown that although PFC tends to be related to better health outcomes (Penley et al., 2002), it does not mediate the adversity/health relationship (Hager & Runtz, 2012; Sheffler, 2019). We found that PFC was a mediator for three of the health variables (self-rated health, functional limitations, and absenteeism), but only for Black participants. Further, Black participants tended to use more PFC overall. Interestingly, however, the overall indirect effect was associated with poorer health. Specifically, for Black individuals, as adversity increased, PFC substantially decreased and even though the pathway from PFC to health was generally positive, the net indirect effect of adversity was poorer health. This finding suggests that a potential target for intervention might be to increase PFC. Several such interventions have been developed with promising results. For example, a 4-week psychoeducational intervention with a focus on coping strategies found increases in PFC and decreases in EFC with concomitant reductions in psychological distress and perceived stress (Steinhardt & Dolbier, 2008). In general, coping intervention research indicates that although most people use a variety of strategies at any given time, it is possible to shift the balance toward decreased use of nonproductive coping strategies and increased use of productive ones (Frydenberg, 2016).

Overall, this study shows that coping style plays a small but significant role in transmitting the effects of early adversity to adult health for Black individuals. However, coping is only one of multiple mechanisms linking adversity with health and it does not operate in isolation. For example, other coping resources such as optimism, sense of control, self-esteem, and social support are generally regarded as helpful to managing stress (Taylor & Stanton, 2007). According to Lazarus and Folkman's transactional model (1984), the way a person appraises a stressor influences the way that person will respond to the stressor. Coping resources tend to influence the appraisal process such that stressors are viewed as less threatening and more amenable to PFC (e.g., Carver et al., 1989). Substantial evidence indicates that Black Americans have higher levels of two important coping resources: self-esteem and perceived social support (Louie et al., 2022; Twenge & Crocker, 2002). One explanation for this racial difference is that as a group, Black Americans' greater exposure to stress has resulted in the increased development of coping resources for navigating adversity (Louie & Wheaton, 2019). Thus, future research should

explore how adverse childhood experiences are related to other coping resources and how these resources interact with coping styles.

A related issue is that as a group, Black Americans use religious coping more than other groups. Conceptually, religious coping would seem to be a form of EFC (Carver et al., 1989). However, among Black Americans, religion has been linked with problem resolution and historically has served as an adaptive tool for withstanding oppression (Abrums, 2004; Watt, 2003). Consistent with this idea, the latent factor structure of the most common measure of coping is different for Black samples, and religious coping is not necessarily part of the EFC factor (Greer, 2007). Further, the way that religious coping is used has been shown to depend upon the individual's level of religiosity and spirituality (Krägeloh, 2012). Specifically, for less religious individuals, religious coping has been associated with maladaptive or avoidant coping strategies but for more religious people, it was associated with PFC (Krägeloh et al., 2012). Because religious coping does not consistently align with the two dimensions of coping explored in this study, it was not included as a potential mediator. Nevertheless, an important direction for future research will be to explore racial differences in religious coping, independent from EFC and PFC, in the context of exposure to early adversity and adult health.

Lazarus and Folkman's (1984) original transactional theory distinguished between PFC and EFC, and this dichotomy has been highly influential in guiding coping research. The present study builds upon substantial contemporary work using this framework, including studies using the MIDUS datasets (e.g., Sheffler et al., 2019; Woo et al., 2024). However, many scholars have criticized this dichotomy for being overly simplistic and failing to recognize that some coping strategies can be classified as both PFC and EFC (Folkman & Moskowitz, 2004). A review of studies that factor analyzed one of the major coping inventories (that is, the Brief Cope Inventory; Carver, 1997) found that two-factor solutions were the modal solutions, and nearly half of the studies identified three factors or fewer (Solberg et al., 2021). Although this result provides some support for the original dual coping taxonomy, it also highlights the need to consider multifaceted taxonomies that explain coping more precisely. A clear implication is that future research involving standard measures of coping should consider using more granular measures of coping rather than the broad brushstrokes of the PFC/EFC dichotomy.

This study has several limitations. First, we focused on mediation using cross-sectional data. Mediation implies change over time as the mediator transmits the effects of one variable to another. Hence, ideally it should be tested using longitudinal data (Maxwell & Cole, 2007). Second, we used self-reported, retrospective measures of adversity. Although this approach is common, participant reports of childhood adversity were subject to the fallibility of human memory. Third, people who racially self-identify as Black comprise a diverse group and often experience different treatment based on their skin tone (Hall, 2017), yet this study did not consider skin tone differences within this group. Another limitation involves the sample composition. Although the MIDUS Refresher sample was based on national probability sampling, the Milwaukee Refresher was comprised of individuals residing in Milwaukee, Wisconsin. Hence, generalizability may be limited. Finally, not all potential covariates were included. As discussed previously, this study did not take religious coping into account, and despite evidence that health behaviors such as smoking or alcohol abuse are linked with both adversity and health outcomes, those variables were not included.

Despite these limitations, this study is the first to test Black and White differences in coping as a pathway connecting early adversity with adult health. It highlights coping style as a potential intervention point for thwarting the long reach of early adversity on later health. It also highlights the importance of considering context (in this case, racial self-identity) when evaluating how adverse childhood events affect later health.

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Data Availability The MIDUS datasets are completely deidentified and are available through the Inter-University Consortium for Political and Social Research. The data used in this study have restricted access and were used with permission.

Code Availability Blimp is publicly available at https://www.appliedmissingdata.com/blimp.

Declarations

Conflict of interest The authors declare that they have no conflict of interest.

Ethical Approval This study was a secondary analysis of publicly available data and was deemed exempt by the Grove City College institutional review board.

Consent to Participate Informed consent was obtained from all individual participants included in the study.

Consent for Publication Not applicable.

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