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Experiences of Adverse Childhood Experiences (ACEs) and Racial Discrimination in Relation to
Depressive Symptoms in College Students

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ABSTRACT

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MPH Candidate, 2019

Background: Research conducted with college students has found that ACEs are associated with poor mental health outcomes. Furthermore, although college campuses have become increasingly diverse, experiences of racial discrimination are still pervasive. These stressors can be detrimental for the college students' mental health. Thus, the aim of this study is to apply the intersectionality framework and minority stress theory to examine sociodemographic predictors related to ACEs, experiences of racial discrimination, and how these factors relate to depressive symptoms in college students.

Methods: Multivariable regressions were conducted on cross-sectional data from 2,685 college students attending 7 different colleges/universities in the state of Georgia. We included measures of sociodemographic characteristics, adverse childhood experiences, experiences of discrimination, and depressive symptoms.

Results: The average age of participants at baseline was 20.51 (SD=1.94) years, 63.9% (n=1,715) were female, 21.9% (n=581) were Black, 7.8% (n=207) were Hispanic, and 8.2% (n=218) were sexual minorities. Lower parental education, attending a public or a technical college, and identifying as Hispanic were associated with higher ACE scores. Identifying as a racial or ethnic minority, compared to identifying as White, was associated with more reports of experiences of discrimination. More ACEs predicted more experiences of racial discrimination, and both contributed to the regression model predicting higher levels of depressive symptoms, which was also associated with attendance at a public college/university.

Conclusions: Our findings indicate that college campuses and staff should provide college students with the resources they need to address ACEs, racial discrimination, and the impacts of these two on depression. Resources, such as mentorship, free counseling appointments, spaces on campuses for college and community support, could help students attain academic and psychosocial success.

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INTRODUCTION

Adverse childhood experiences (ACEs) have been associated with negative health outcomes [1] and research has shown that higher levels of ACEs are correlated with increased risk of worsening health conditions such as asthma, ischemic heart disease, and chronic lung disease [1-3]. Research has also found that the cumulative impact of ACEs was associated with mental health problems including anxiety and depression [4, 5]. Moreover, racial discrimination is a type of chronic stressful life experience [6] that can be more pervasive among racial and ethnic minorities [7]. Experiences of racial discrimination can adversely affect individuals' health [6] and lead to psychological distress [6, 8]. Research has shown that among racial and ethnic minorities, depression and anxiety are the most common types of distress related to racial discrimination [9-11]

College is a unique transitory period for students, as they immerse themselves in a new environment and become exposed to new ideas and ways of living [12]. Through engagement with their peers, college students can either adopt resiliency-building behaviors or engage in risky habits/behaviors during this transitory period [12]. Research conducted with college students has found that ACEs are associated with poor mental health [13-15], alcohol use [16], and diminished health status [17]. Furthermore, although college campuses have become more racially and ethnically diverse [18, 19], experiences of racial discrimination are still prevalent. Coupled with the demands to perform well academically, racial discrimination can be detrimental to the mental health of students, especially racial and ethnic minority students.

Despite the vast research on ACEs and racial discrimination, few studies have investigated the adverse impact of ACEs on a racially diverse sample of college students [12, 20, 21]. Furthermore, few studies have considered the associations between racial discrimination and

health outcomes in college students [22]. It is therefore crucial to examine the impact of adversity and discrimination in relation to depressive symptomology across racial and ethnic minority students. This study applies an intersectional framework and minority stress theory to examine sociodemographic predictors related to ACEs and experiences of racial discrimination, and how these factors relate to depressive symptoms in college students.

LITERATURE REVIEW

Adverse Childhood Experiences (ACEs)

Adverse childhood experiences (ACEs) are associated with negative health outcomes [1] and risky behaviors [23-25]. A landmark study conducted by Felitti et al. examined conventional ACEs including abuse (i.e., emotional, physical, sexual), household dysfunction (i.e., mother treated violently, household substance abuse, mental illness in household, parental separation/divorce, criminal household member), and neglect (i.e., emotional, physical), which indicated a strong-dose relationship between these experiences and multiple risk factors for early mortality [1, 26]. Other studies have expanded the range of ACEs to include other experiences, such as racial discrimination, witnessing community violence, bullying, living in unsafe neighborhoods, and history with foster care, among others [27-29].

While this seminal study analyzed data from a sample with limited diversity (i.e., 4.8% Black, 10.0% younger [18-34 years], 6.0% with less than a high school education), subsequent research has examined more diverse populations. For example, a study from Cronholm et al. (including 36.1% Black respondents, 36.8% young adults, and 20.0% with less than a high school education) found that compared to the Felitti et al. study, their study participants reported higher rates for the majority of conventional ACEs (with the exceptions of sexual abuse, emotional neglect, and physical neglect) as well as other ACEs, including witnessing community

violence, racial discrimination, and feeling that their neighborhood was unsafe [29]. Examining a broad range of ACEs in diverse samples is therefore important for developing a stronger understanding of the prevalence and impact of ACEs in different subgroups.

Racial Discrimination

Racial discrimination is a chronic, multifaceted (i.e., biological, social, psychological) stressor [30]. Research has shown that exposures to racism and racial discrimination have been negatively associated with a range of risk factors (e.g., behavioral, psychological) that can negatively impact psychological and physical health and health behaviors [11, 30-34]. As a chronic social stressor, racial discrimination can activate biophysiological stress responses in the body, leading to adverse effects on one's health and emotional state [30, 35-38]. These adverse effects are likely to lead to the adoption of risky coping behaviors, such as smoking, illicit substance use, and excessive alcohol use [39, 40]. A meta-analysis done by Carter et al. found that when examining the effects of racial discrimination on different outcomes (e.g., psychological health, physical health, cultural identity, substance use), the largest effect size was found for psychological health (e.g., depression and anxiety) [34].

ACEs, Racial Discrimination, and Depression in College Students

Research has shown that many students who arrive on college campuses have been exposed to trauma [20], with 30% to 84% experiencing at least one traumatic event in either childhood or adulthood [21, 41]. Unfortunately, college students who are exposed to ACEs are at increased risk for mental health problems [42], including depressive disorders [5, 43], anxiety disorders [4, 44], and eating disorders [45]. They are also at heightened risk for alcohol [46] and polysubstance use [20], insomnia [47], and college dropout [48]. Longitudinal research has found that high levels of ACEs among college students is associated with worsening mental

health during the college years [21]. Moreover, mental health problems related to ACEs have been shown to persist from adolescence into adulthood [49].

Research has documented experiences of racial discrimination among the broad range of racial/ethnic minority students, including Black [50, 51], Hispanic [52], Asian [50, 53] and American Indian/Alaskan Native students [54, 55]. However, experiences of racial discrimination seem to be more frequent among undergraduate students from varying racial/ethnic minority backgrounds [56]. In the general population, some research has shown that Blacks report experiencing discrimination at higher frequencies (e.g., once every other week) compared to other racial and ethnic minority groups [7]; however, other studies have found that Asians and Hispanics also report frequent experiences of perceived discrimination [50, 57-59]. It is also important to note that racial/ethnic minority students do not perceive or encounter discrimination in a uniform way [7]. Perceived discrimination of Blacks is often race-related [57], while for Hispanic and Asian students, perceived discrimination is often based on being perceived as a foreigner [60, 61]. Perhaps unsurprisingly, research has shown that racial/ethnic minorities report greater experiences of discrimination and greater stress from such experiences compared to their White counterparts [50, 62-64].

For college students, experiences of discrimination can take the form of microaggressions from faculty and peers, as well as unwelcoming or socially uninviting undergraduate campus environments [56]. Such experiences of racial discrimination can negatively impact self-esteem, well-being, and mental health of racial/ethnic college students [7]. Perceived discrimination has been linked to higher levels of depression, suicidal ideation, and anxiety among Black, Hispanic, and Asian students [58, 59, 65-67]. Several other studies have also highlighted the ways in which discrimination intersects with other aspects of racial/ethnic minority students' experience (e.g.,

identity, imposter syndrome) [68-70], which can lead to adverse effects on students' academic performance [56].

Sociodemographic Predictors of Experiencing ACEs and Racial Discrimination

In terms of sociodemographic factors associated with ACEs, one study found that female students reported higher prevalence of experiencing ACEs (e.g. life, death, divorce, sexual, violence, other) compared to their male counterparts [71]. Although studied in an adult population, research also suggests that higher levels of ACEs is correlated with greater risk for high school dropout, unemployment, and poverty [72]. More research is needed to explore potential associations between ACEs and other sociodemographic factors (e.g. race/ethnicity, sexual orientation) in college populations, as existing research has generally focused on the broader range of adults [73, 74].

Regarding sociodemographic factors related to racial discrimination, perceived discrimination appears to be more prevalent among Black males, especially among adolescent and young adult males [75, 76], compared to perceived discrimination among Black females [77]. However, sex differences in the intensity and effect of a stressor may appear contradictory [78], as one study found that self-perceived racial discrimination was strongly associated with higher depressive symptoms and poorer mental health in Black young adult women compared to their male counterparts [76]. Additionally, socioeconomic status (SES) has been frequently studied in relation to racial discrimination, especially among Blacks [30, 79, 80]. Findings are mixed; some research found a positive relationship between SES and discrimination [81], while others found that SES is inversely related to experiences of discrimination among Black participants [82]. A possible explanation for this could be that the pattern of association between

SES and racism depends on what dimensions of racism are assessed (e.g., measures assessing subtler versus overt expressions of racism) [30].

Conceptual Framework: Intersectionality & Minority Stress Theory

Intersectionality is a framework recognizing mutually reinforcing categories, such as race, class, and sex [83], and how such categorizations contribute to health disparities and social inequalities in health [84, 85]. Minority stress theory suggests that conditions such as belonging to stigmatized social categories cause stress and may lead to negative mental and physical outcomes [86]. Minority stress theory distinguishes the unique and additive stress to which individuals are exposed as a result of their minority social status, highlighting the relevant individual biological, genetic, or other nonsocial stressors [86]. Relevant to the current study, these perspectives provide a relevant framework for understanding how race/ethnicity is related to and interacts with ACEs and experiences of racial discrimination in relation to mental health outcomes, specifically depressive symptoms. This is particularly pertinent given the aforementioned literature regarding racial disparities in ACEs and racial discrimination, as well as other sociodemographics associated with such disparities, and ultimately mental health.

This study aimed to apply a framework informed by the notion of intersectionality and the minority stress theory in order to explore sociodemographic predictors related to ACEs and experiences of discrimination; particularly, as these factors may contribute to experiences of depressive symptoms in a sample of college students in southeastern US. We hypothesized that participants with minority status (e.g. females, racial/ethnic students, sexual minorities) and of low SES will indicate higher reports of ACEs, racial discrimination, and depressive symptoms.

METHODS

Procedures & Participants

Data for the current study is derived from Project DECOY (**D**ocumenting **E**xperiences with **C**igarettes and **O**ther Tobacco in **Y**oung Adults). The study was a two-year longitudinal, cohort study that involved 3,418 racially/ethnically diverse young adults. In order to obtain a wide range of young adults regarding sociodemographic backgrounds, participants were recruited from rural and urban college campus in Georgia, including two public universities, two private colleges/universities, two community/technical colleges, and a historically black university. Eligibility criteria for participants were: 1) age ≥ 18 and ≤ 25 ; and 2) ability to read English.

For recruitment, college email addresses were obtained from the registrar's office from each college/university for students meeting eligibility criteria. Three thousand 18-25-year olds were randomly selected from one private and two public universities. The remainder of the schools had 18-25-year-old student populations of fewer than 3,000; therefore, the entire student population of that age range at those schools was included in recruitment. The total response rate was 22.9% ($N=3,574/15,607$). Seven days after initial recruitment and completion of the baseline survey, we asked participants to confirm their participation by clicking a "confirm" button included in an email sent to them, which reiterated the tasks involved in the study and its timeline. Once participants clicked "confirm", they were enrolled into the study and sent their first incentive in the form of a \$30 gift card via email. The confirmation rate was 95.6% ($N=3,418/3,574$). The intent was to enroll participants who were engaged in email and were potentially more likely to be retained in the subsequent waves of data collection.

Data collection began in Fall 2014 and consisted of individual assessments every four months for two years (during Fall, Spring, and Summer). The current analysis was analyzed from

Wave 5 of the study. Data from Wave 5 was collected between April to May 2016. Current analyses focused on a total of 2,685 out of the 3,418 participants (78.6%) who completed the Wave 5 assessment and had complete data relating to the current research aims.

Measures

Data from the baseline survey assessment of sociodemographic information, Wave 2 assessments for ACEs, and Wave 5 assessments for experiences of racial discrimination and depressive symptoms were used for data analysis.

Sociodemographic Characteristics

The sociodemographic factors that were assessed included age, sex, sexual orientation, race, ethnicity, and parental education. We also coded school type (private, public, technical college, HBCU) and whether the campus was located in a rural or urban setting.

Adverse Childhood Experiences (ACEs)

ACEs were assessed using the ten-item scale that was developed by the Centers for Disease Control and Prevention (CDC) [1, 26] and used in the Behavioral Risk Factor Surveillance System (BRFSS). The 10-items were used to evaluate potential stressful and traumatic experiences that occurred in the participant's first 18 years of life. These experiences include abuse (e.g., physical, sexual), household challenges (e.g., parents with mental health, parental substance use, interpersonal violence), and neglect [1]. Response options were 0=No and 1=Yes. Sample items include, "Parents divorced" and "Family diagnosed with depression." The total score was computed by summing the responses to all 10 items. Scores could range from 0 to 10, with higher scores indicating more ACEs.

Experiences of Discrimination

Experiences of discrimination were assessed by asking participants, “How often have you felt as though you were treated badly because of your race or ethnicity?” Responses options were: 1=Never, 2=Occasional, 3=Sometimes, 4=Often, and 5=Very often. For the purposes of this study, response options were collapsed into three categories: 1=Never, 2=Occasional, and 3=Sometimes to Very Often (or at least sometimes) [87, 88].

Depressive Symptoms

Depressive symptoms were assessed from the Patient Health Questionnaire – 9 item (PHQ-9), which is a 9-item scale that utilized diagnostic criteria for depressive disorders from the Diagnostic and Statistical Manual of Mental Disorders (DSM)-IV [89]. Response options ranged from 1=Not at all to 4=Nearly every day. The scale items asked participants if they were bothered by any of the following problems during the past two weeks (e.g., “little interest or pleasure in doing things”). The total score was computed by summing the responses to all 9 items. Scores could range from 9 to 36, with higher scores indicating increased depressive symptoms.

Data Analysis

Descriptive statistics were conducted to characterize the sample. We then conducted bivariate analyses including chi-square tests and one-way ANOVAs to examine correlates of ACEs, experiences of racial discrimination, and depressive symptoms, respectively. We then conducted multivariable regression to examine correlates of: 1) ACEs using linear regression and including only sociodemographic factors; 2) experiences of discrimination using ordinal regression and entering sociodemographic factors and ACE scores; and 3) depressive symptoms using linear regression and entering sociodemographic factors, ACE scores, and experiences of

discrimination. We also explored interactions between ACEs and experiences of discrimination and between race (White vs. Black), ACEs, and experiences of discrimination in relation to depressive symptoms among only White and Black college students. All analyses were conducted using SPSS 24.0.

RESULTS

Participant Characteristics

Per Table 1, the average age at baseline was 20.51 (SD=1.94) years, 63.9% (n=1,715) was female, 21.9% (n=581) was Black, 7.8% (n=207) was Hispanic, and 8.2% (n=218) was sexual minority. Additionally, 53.9% (n=1,431) of participants reported parental education level of at least a bachelor's degree and higher, 43.9% (n=1,179) were predominantly enrolled in a private institution, and 52.8% (n=1,417) reported attending school in a rural setting.

The average ACEs score was 1.25 (SD=1.75), with 48.2% (N=1,189) reporting no ACEs, 21.6% (N=533) reporting 1, 11.8% (N=291) reporting 2, 6.8% (n=167) reporting 3, and the remainder (11.6%) reporting more than 3. Average number of experiences of discrimination was 1.56 (SD=0.74), with 59.7% (1,602) reporting no discrimination, 25.0% (N=672) experiencing occasional discrimination, and 15.3% (N=411) experiencing discrimination at least sometimes. The average depressive symptom score on the PHQ-9 was 5.36 (SD=5.69).

Bivariate Analyses

Bivariate analyses (Table 1) indicated that ACE scores were associated with being older ($p<.001$), being female ($p<.001$), being a sexual minority ($p<.001$), being Black or Other race ($p<.001$), being Hispanic ($p<.001$), lower parental education ($p<.001$), and attending a public college/university, technical college, or HBCU versus a private college/university ($p<.001$), as well as with greater reports of experiences of discrimination ($p<.001$) and depressive symptoms

($p < .001$). Reports of racial discrimination were associated with being older ($p = .026$), being female ($p < .001$), being heterosexual ($p = .005$), being Non-Hispanic ($p < .001$), being Black or Other race ($p < .001$), lower parental education ($p < .001$), attending an HBCU ($p < .001$), living in a rural setting ($p = .001$), ACEs ($p < .001$), and greater depressive symptoms ($p < .001$). Reporting greater depressive symptoms was associated with being older ($p = .001$), being female ($p < .001$), being a sexual minority ($p < .001$), being White, Asian, or Other ($p = .031$), being Hispanic ($p = .017$), lower parental education ($p = .019$), and attending a private college/university, public college/university, and technical college versus an HBCU ($p = .001$).

Multivariable Analyses

Preliminary analyses exploring factors associated with ACEs, experiences of racial discrimination, and depressive symptoms were conducted to explore interactions between ACEs and experiences of discrimination and between race (White vs. Black), ACEs, and experiences of discrimination in relation to depressive symptoms among only White and Black college students. These analyses did not identify any significant interaction effects; thus, we provide the multivariable results for the full sample with Wave 5 data.

Multivariable regression analyses (Table 2) indicated that higher ACE scores were associated with being older ($B = 0.05$, $p = .010$), being female ($B = 0.23$, $p = .002$), being a sexual minority ($B = 0.90$, $p < .001$), not being Asian (vs. White; $B = -0.36$, $p = .013$), being Hispanic ($B = 0.31$, $p = .019$), having parents with lower education ($B = -.054$, $p < .001$), and attending a public college/university ($B = 0.31$, $p < .001$) or a technical college ($B = 0.31$, $p = .004$) versus a private college/university.

More reports of racial discrimination were associated with not being a sexual minority ($OR = -0.36$, $p = .030$), being Black ($OR = 2.06$, $p < .001$), Asian ($OR = 1.96$, $p < .001$), or Other race

(OR=1.15, $p<.001$) versus White, being Hispanic (OR=0.94, $p<.001$), and more reports of ACEs (OR=0.19, $p<.001$). Adding ACE scores to the model predicting experiences of discrimination increased the Nagelkerke R-Square from .236 to .257 ($p<.001$).

Higher levels of depressive symptoms were associated with being younger ($B=-0.20$, $p=.001$), being female ($B=0.80$, $p=.001$), being a sexual minority ($B=1.13$, $p=.007$), not being Black (vs. White, $B=-1.35$, $p=.001$), attending a public (vs. private) college/university ($B=0.82$, $p=.005$), more reports of ACEs ($B=0.49$, $p<.001$), and more reports of experiences of racial discrimination ($B=1.13$, $p<.001$). Adding ACE scores and experiences of discrimination to the model predicting depressive symptoms increased the Adjusted R-Square from .023 to .065 ($p<.001$).

DISCUSSION

Main findings included that racial or ethnic minority status was related to more reports of ACEs and racial discrimination, and that more reports of ACEs and racial discrimination predicted depressive symptoms. These findings align with the literature [43, 58, 59, 65-67]. Being a racial or ethnic minority did not predict depressive symptoms, however. In fact, being White, in comparison with being Black, predicted higher levels of depressive symptoms. Moreover, we found that racial minority students, compared to Whites, reported more experiences of racial discrimination. Students who identified as Hispanic reported more racial discrimination compared to non-Hispanics. These findings are consistent with the literature, as studies have found that Blacks and Hispanics are more likely to report racial discrimination compared to their White counterparts [50, 51, 56].

We identified subgroups that reported higher ACEs, including those who were sexual minorities, Hispanic, and those of lower SES (e.g., lower parental education and attending public

or technical schools). Because racial/ethnic minorities have endured historic and current experiences of discrimination that increase the likelihood of being exposed to social and economic disadvantage [90], this might explain why racial/ethnic minorities tend to experience higher ACE burden than other groups [73]. Findings also indicated an association between more reports of ACEs and more reported experiences of racial discrimination. This is a novel finding that contributes to the literature, as most studies focus on the impacts of either racial discrimination [91, 92] or ACEs [23-25] on health outcomes of participants, but less research has assessed the health impact of both experiences. Some studies have suggested expanding the original ACEs scale to include other constructs such as discrimination, community violence, bullying, and social isolation [27-29, 93, 94]. Future research should continue to investigate the synergistic associations between racial discrimination and ACEs on the health impacts of college students.

Through this study, we found that being female and being a sexual minority were associated with higher depressive symptoms. This is consistent with the minority stress theory which posits that the stressors one experiences due to their minority status (or statuses) can lead to exacerbated mental and physical health problems [86, 95, 96]. Studies have also found that sexual minorities in particular are at higher risk for mental health conditions due to the psychological stress of identifying as a sexual and/or gender minority [97].

Our finding that being Black was associated with lower depressive symptoms compared to being White was also consistent with the literature, as some studies report lower or equivalent rates of depressive symptoms in Black individuals [98-101]. In contrast, some other studies report higher rates of major depressive disorder in Blacks compared with White individuals [102-104]. Studies have tried to address this discrepancy in reports by considering that the

prevalence of depression does differ significantly by race/ethnicity, but that comparative rates depend on the type of depression experienced by different racial/ethnic groups [105]. More research on how we can measure the ways in which depression manifest in different racial/ethnic groups need to be conducted.

This research has implications for future research and practice. Research has shown that depression among college students is a risk factor for poor academic performance [106, 107], suicidal thoughts [108, 109], and college dropout [110]. Research has also shown that reports of racial discrimination among racial/ethnic minority students can also negatively impact these students' academic performance [56]. Due to these negative implications, it is imperative that colleges/universities provide support services to minority students. These services can include increased mentorship, free counseling appointments, community and college outreach to create spaces of support for students throughout the college or university [111]. Given that continual exposure to a hostile campus climate can adversely influence the psychological health of racial and ethnic minority students, such support services would help foster a more diverse and inclusive campus climate [51]. Counseling and campus staff looking to support students academically and psychosocially must be educated on the effects that discrimination has on minority students; the denial or minimization of racism by authorities may create additional stressors on students who have limited outlets to express their experiences [51]. Thus, the intersectionality framework and minority stress theory can provide insight on the unique experiences of racial/ethnic minority students, allowing us to advocate for better resources for these students on campus.

These findings also call for the promotion and/or sustainment of partnerships between historically black colleges/universities (HBCUs) and predominantly white institutions (PWIs).

Research has shown that for Black students in particular, attending an HBCU as opposed to a PWI can lead to more positive adjustments to their school environment [112]. This can be attributed to African-centered insights linking history and culture [112] that are more present at HBCUs and drastically lacking in PWIs. Therefore, collaborative efforts among campus staff and student body representatives at these institutions will be beneficial in better understanding current programming that is offered at HBCUs to support Black students psychosocially. Such efforts are transferrable and can be applied to the programming offered to Black students at PWIs. Discussions on lessons learned can also be useful to determine what can be improved to support students who may have experienced ACEs and racial discrimination and have depressive symptomology. While these partnerships highlight the experiences of Black students, this synergy can be instrumental in creating a model that aids in better understanding key components and best practices that can be expanded to include and support other racial/ethnic minority students in various postsecondary institutions.

Limitations

Although our study generated important findings, some limitations should be noted. First, while the sampling frame included diverse colleges and universities and diverse racial/ethnic group composition, all schools were selected from Georgia. Additionally, our study sample included a higher proportion of women and low representation of sexual minorities. Thus, the generalizability of these findings across other universities, colleges, and other institutions in the United States is limited and unknown. Moreover, the data are cross-sectional and provides no basis for causal directionality. Another limitation was that all survey measures relied on self-report and might have been impacted by reporter bias. Lastly, the ACE assessment measure relied on retrospective reporting of sensitive, traumatic events that occurred prior to 18 years of

age and are subject to potential systematic confounds (e.g., forgetting, distortion, social desirability bias). Despite these limitations, the findings provide strong evidence for associations between ACEs and racial discrimination, and the collective impact of these stressors on depression outcomes in college students.

Conclusions

The negative impact of ACEs and racial discrimination on depressive outcomes have been widely studied and acknowledged. However, the associations between ACEs and racial discrimination have been studied separately but not together. This study contributes to the body of literature surrounding racial discrimination, depressive symptoms, and experiencing ACEs in college students. Because colleges can serve as an important intervention point [113], our findings can help inform interventions that target racial/ethnic minority students on college campuses to provide additional assistance to students who have experienced ACEs and have or are currently experiencing racial discrimination. Moreover, our findings support the need for partnerships between different colleges and universities to better address ACEs and racial discrimination, and the relationship between them and depression in racial and ethnic minority students.

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Table 1. Participant Characteristics and Bivariate Analyses Regarding ACE Scores, Experiences of Discrimination, and Depressive Symptoms

Variable	All participants N=2,865	ACE Scores		Experiences of Discrimination			Depressive Symptoms		
		M (SD) or r	p	No report N=1,602	Occasional N=672	At least sometimes N=411	p	M (SD) or r	p
<i>Sociodemographics</i>									
Age (M, SD)	20.51 (1.94)	.05	<.001	20.42 (1.93)	20.64 (2.01)	20.61 (1.85)	.026	-.07	.001
Sex (N, %)			<.001				<.001		<.001
Male	970 (36.1)	1.04 (1.68)		625 (39.0)	242 (36.0)	103 (25.1)		4.77 (5.41)	
Female	1715 (63.9)	1.45 (1.87)		977 (61.0)	430 (64.0)	308 (74.9)		5.69 (5.82)	
Sexual Orientation (N, %)			<.001				.005		<.001
Heterosexual	2442 (91.8)	1.22 (1.74)		1449 (91.4)	631 (94.5)	362 (89.2)		5.22 (5.64)	
Other	218 (8.2)	2.28 (2.34)		137 (8.6)	37 (5.5)	44 (10.8)		6.83 (6.15)	
Race (N, %)			<.001				<.001		.031
White	1734 (65.5)	1.23 (1.77)		1307 (82.1)	312 (47.7)	115 (28.5)		5.34 (5.62)	
Black	581 (21.9)	1.59 (1.94)		169 (10.6)	205 (31.3)	207 (51.4)		4.95 (5.60)	
Asian	183 (6.9)	0.59 (1.34)		62 (33.9)	79 (43.2)	42 (23.0)		5.55 (5.96)	
Other	151 (5.7)	1.69 (1.99)		54 (3.4)	58 (8.9)	39 (9.7)		6.48 (5.79)	
Ethnicity (N, %)			<.001				<.001		.017
Non-Hispanic	2462 (92.2)	1.26 (1.78)		1511 (94.8)	594 (88.9)	357 (87.7)		5.29 (5.62)	
Hispanic	207 (7.8)	1.71 (2.00)		83 (5.2)	74 (11.1)	50 (12.3)		6.28 (6.56)	
Parental Education (N, %)			<.001				<.001		.019
< Bachelors	1223 (46.1)	1.70 (1.99)		636 (40.2)	335 (50.3)	252 (62.2)		5.66 (5.91)	
≥ Bachelors	1431 (53.9)	0.94 (1.54)		947 (59.8)	331 (49.7)	153 (37.8)		5.13 (5.53)	
School Type (N, %)			<.001				<.001		.001
Private	1179 (43.9)	0.97 (1.58)		789 (49.3)	269 (40.0)	121 (29.4)		5.13 (5.35)	
Public	753 (28.0)	1.44 (1.89)		452 (28.2)	185 (27.5)	116 (28.2)		6.05 (6.25)	
Technical college	461 (17.2)	1.69 (2.08)		269 (16.8)	116 (17.3)	76 (18.5)		5.24 (5.68)	
HBCU	292 (10.9)	1.58 (1.80)		92 (5.7)	102 (15.2)	98 (23.8)		4.68 (5.42)	
Rural/urban (N, %)			.129				.001		.641
Rural	1417 (52.8)	1.35 (1.87)		814 (50.8)	351 (52.2)	252 (61.3)		5.31 (5.76)	
Urban	1268 (47.2)	1.25 (1.76)		788 (49.2)	321 (47.8)	159 (38.7)		5.41 (5.64)	
<i>Psychosocial Factors, M (SD)</i>									
ACEs	1.25 (1.75)	--	--	1.03 (1.59)	1.45 (1.88)	1.85 (1.96)	<.001		
Experiences of discrimination	1.56 (0.74)	0.17	<.001	--	--	--	--		
Depressive symptoms	5.36 (5.69)	0.18	<.001	4.83 (5.51)	5.69 (5.45)	6.88 (6.45)	<.001	--	--

Table 2. Multivariable Regression Examining Correlates of ACEs, Experiences of Discrimination, and Depressive Symptoms

Variable	ACEs			Experiences of Discrimination			Depressive Symptoms		
	B	CI	p	OR	CI	p	B	CI	P
Age	0.05	(0.01, 0.08)	.010	0.02	(-0.02, 0.07)	.304	-0.20	(-0.32, -0.08)	.001
Sex									
Male	Ref	--	--	Ref	--	--	Ref	--	--
Female	0.23	(0.08, 0.37)	.002	0.15	(0.04, 0.34)	.123	0.80	(0.32, 1.29)	.001
Sexual Orientation									
Heterosexual	Ref	--	--	Ref	--	--	Ref	--	--
Other	0.90	(0.66, 1.14)	<.001	-0.36	(-0.69, -0.04)	.030	1.13	(0.30, 1.95)	.007
Race									
White	Ref	--	--	Ref	--	--	Ref	--	--
Black	0.06	(-0.15, 0.28)	.553	2.06	(1.79, 2.33)	<.001	-1.35	(-2.13, -0.57)	.001
Asian	-0.36	(-0.64, -0.08)	.013	1.94	(1.61, 2.28)	<.001	0.30	(-0.66, 1.26)	.539
Other	0.23	(-0.07, 0.53)	.132	1.15	(0.79, 1.52)	<.001	0.16	(-0.88, 1.21)	.761
Hispanic	0.31	(0.05, 0.57)	.019	0.94	(0.62, 1.26)	<.001	-0.07	(-0.96, 0.83)	.886
Parental Education									
< Bachelors	Ref	--	--	Ref	--	--	Ref	--	--
≥ Bachelors	-0.54	(-0.69, -0.40)	<.001	-0.17	(-0.36, 0.03)	.089	-0.08	(-0.58, 0.42)	.757
School Type									
Private	Ref	--	--	Ref	--	--	Ref	--	--
Public	0.31	(0.14, 0.48)	<.001	0.22	(0.00, 0.45)	.054	0.82	(0.25, 1.39)	.005
Technical college	0.31	(0.10, 0.52)	.004	0.17	(-0.11, 0.45)	.234	0.02	(-0.71, 0.75)	.961
HBCU	0.14	(-0.15, 0.43)	.353	0.01	(-0.35, 0.37)	.970	-0.50	(-1.53, 0.53)	.340
Rural/urban									
Rural	Ref	--	--	Ref	--	--	Ref	--	--
Urban	0.04	(-0.12, 0.19)	.640	0.05	(-0.15, 0.25)	.636	0.30	(-0.22, 0.82)	.252
Psychosocial Factors									
ACEs	--	--	--	0.19	(0.14, 0.24)	<.001	0.49	(0.36, 0.63)	<.001
Experiences of discrimination	--	--	--	--	--	--	1.13	(0.79, 1.48)	<.001
R-Square*		.080			.257			.065	

*Adjusted R-Square reported for ACEs and depressive symptoms (linear regression); Nagelkerke R-Square reported for experiences of discrimination (ordinal logistic regression).

Notes: Adding ACE scores to the model predicting experiences of discrimination increased the Nagelkerke R-Square from .236 to .257 (p<.001).

Adding ACE scores and experiences of discrimination to the model predicting depressive symptoms increased the Adjusted R-Square from .023 to .065 (p<.001).