



Perceived discrimination and mental health in college students: A serial indirect effects model of mentoring support and academic self-concept

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ABSTRACT

Objective: Examine the direct and indirect effects of perceived discrimination, mentoring support, and academic self-concept on college student mental health. **Participants:** Three hundred fifteen undergraduates of minoritized gender (72%), ethnic (57%), and sexual (37%) identities. **Methods:** An online survey assessed perceived discrimination, mentoring support, academic self-concept, and mental health. **Results:** Perceived discrimination was associated with mentoring support ($B=-0.11$, $p=.019$), academic self-concept ($B=-0.13$, $p<.001$), and mental health ($B=-0.15$, $p<.001$). Additionally, mentoring support ($B=0.29$, $p<.001$) and academic self-concept ($B=0.53$, $p<.001$) were associated with mental health, and each other ($B=0.25$, $p<.001$). Significant indirect effects were observed such that mentoring support and academic self-concept, individually and collectively, contributed to the association between perceived discrimination and mental health. **Conclusions:** Addressing discrimination, creating supportive relationships, and facilitating academic growth may reduce mental health concerns in undergraduate populations, thereby having implications for college transition and retention strategies.

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Introduction

Despite higher education's efforts to implement policies promoting diversity and inclusion, discrimination remains prevalent across college campuses.^{1,2} At some point in their life, anyone could experience discrimination, but people of minoritized[†] identities experience a disproportionately high rate of discrimination.^{4,5} College students of color, for example, are two to four times more likely to report discrimination compared to White peers.⁶ Likewise, college students with minoritized sexual identities are two times more likely to experience discrimination than heterosexual peers.⁷ Such frequent encounters with discriminatory treatment can lead to emotional and psychological distress.

People who perceive themselves as targets of discrimination are more likely to report mental health concerns than those who do not.^{8,9} For example, members of minoritized ethnic groups,^{10–13} as well as sexual and gender groups,^{4,12,14,15} commonly report experiences of anxiety, depression, and psychological distress when faced with discrimination. Studies specifically focused on college students suggest that discrimination and mental health concerns co-occur throughout

college campuses,^{1,2,16} similar to the general population's experience. For Black, Latinx, and Asian college students, trauma-related symptoms are heightened as the frequency of racial and ethnic discrimination increase.^{17,18} Among lesbian, gay, and bisexual college students, depression, anxiety, and substance use are frequently reported by those exposed to heterosexist harassment.^{19,20} Therefore, research is needed to understand the potential factors that may exacerbate or attenuate the relationship between perceived discrimination and mental health among students of minoritized identities. Strong, trusted relationships and social support networks may help students face and deal with the discrimination they experience at their institutions.

Social support networks comprised of friends, family, and mentors serve a protective role against perceived discrimination, as they enhance coping and promote positive development for college students' well-being.^{21,22} However, exposure to discrimination may limit a student's willingness to engage with potential mentors. For example, doctoral students of color describe direct (e.g., overt racism and tokenism against themselves)²³ and

vicarious (e.g., racism against faculty of color)²⁴ experiences of racism as impeding their ability to engage in faculty mentor relationships. Students of color may also hold negative perceptions of mentorship because of the institution's lack of faculty of color²⁴ and their mistrust toward White mentors,²³ respectively rooted in experiences of institutional and personal racism. Compared to men, women in STEM doctoral programs report more gender discrimination in their department and are more likely to perceive faculty mentoring support poorly.²⁵ Graduate women of color also express difficulty in finding support, as faculty members question their belonging, credibility, and personhood because of their minoritized gender and racial identities.²⁶ Altogether, these findings suggest that some students may avoid seeking mentorship when faced with discrimination, and those who have a mentor may view the relationship poorly if they experience discrimination from the mentor. When students undergo their college education without an adequate, or any for that matter, mentor, they are left to reflect and adapt to complex experiences on their own, which imposes an additional burden to their mental health.

A lack of mentoring support hinders college students' mental health as they may feel ill-prepared and insecure during their transition and acclimation to their institution.²⁷⁻²⁹ Students with access to a mentor who provides social, emotional, and academic support display improved psychological well-being, regardless if the relationship is formal^{30,31} or informal.^{32,33} For example, women doctoral candidates described how mentors encouraged engagement in leadership roles, enhanced self-efficacy, and guided them through difficult times.³⁴ Compared to nonmentored peers, first-year nursing³¹ and Latinx students³⁰ with mentors report reduced stress, depression, and loneliness, as well as an increased sense of self-efficacy and belonging.^{30,31} Moreover, students of minoritized identities with more mentors report feeling a greater sense of belonging and higher educational aspirations,³³ along with fewer symptoms of depression and anxiety.³² Combined, these results show that structured interactions and organic relationships with mentors may enhance mental health, especially if students have greater accessibility to these types of relationships early in their educational careers. The benefits of meaningful mentor relationships are not confined to mental health only, as they extend to a student's academic life.³² However, when faced with discrimination students may experience barriers to achieving academic success.

Perceived discrimination reduces a student's academic development and learning outcomes as their identity as a student is threatened by the added stress and growing self-doubt about one's academic skills that the discrimination may foster.³⁵⁻³⁷ Discrimination particularly

teaches students of minoritized identities to lower their expectations and, in turn, question their ability to excel academically or stay on track to graduate.^{38,39} For instance, students of color who experience recurrent discrimination have worse scores in math, science, and general academic self-efficacy,³⁹ as well as lower grade point averages and graduation rates.³⁸ Relatedly, students with minoritized sexual identities who experience heterosexist harassment and microaggressions are more likely to report lower grade point averages and less likely to meet their academic expectations and remain academically engaged.^{40,41} Together, these studies suggest students who experience discrimination question their ability to perform academically, leading to low scholarly achievement. Given that academic performance during undergraduate studies can influence postgraduate employment opportunities, poor academic performance can add undue psychological burden among college students.⁴²

College students with high uncertainty, insecurity, and doubt for their academic success are more likely to report depression and anxiety.⁴³⁻⁴⁵ Mental health outcomes related to academics success are a particular concern for students of minoritized identities because they often experience a lower sense of belonging and greater feelings of inadequacy than students of privileged backgrounds.^{44,46} For instance, women are less likely to feel academically competent and report more psychological distress and depression than men.^{46,47} Similarly, Black college students experiencing the imposter phenomenon report lower self-esteem and higher psychological distress.^{48,49} These findings collectively reveal that college students who feel confident in their academic abilities experience improved mental health. However, academic self-confidence often eludes students of minoritized identities, leading to greater mental health concerns. Therefore, trusted mentor relationships focused on enhancing one's self-perceptions of their academic abilities may help students during their undergraduate studies.

Based on extant literature, mentoring support and academic self-concept may partially explain the relationship between perceived discrimination and mental health in college students. For instance, frequent discriminatory experiences lead to lower engagement with mentor relationships, and that lack of mentorship support is then not available to serve as a protective factor and attenuate the harmful effects of discrimination on college student mental health. Additionally, students report lower academic self-concept when faced with discrimination, and that lack of confidence in one's academic abilities exacerbates the psychological distress endured from the discriminatory events. Given the established relationships, exposure to discrimination may hinder a college student's mental health by undermining their access to mentorship and sense of academic competence.

Along with serving as mediating variables to the relationship between perceived discrimination and mental health, prior studies suggest the presence of a bidirectional association between academic self-concept and mentoring support.^{50–52} Either could be the mediator between perceived discrimination and mental health, driving differences in mental health outcomes. For example, academic self-concept could come first as the mediator, with mentoring support as the second mediator; or mentoring support could come first as the mediator, followed by academic self-concept as the second mediator. The latter is more plausible because doctoral students who receive more support from faculty advisors⁵³ and undergraduate students who describe faculty advisors as more approachable and accessible⁵⁴ report increased levels of academic self-confidence. Therefore, college students with access to mentoring support experience a beneficial effect on their academic self-perceptions. Given these findings, a lack of meaningful and encouraging mentor relationships leads to a lower sense of academic competence, and that diminished belief in one's academic ability hinders the promotion of college student mental health.

Accordingly, the present study sought to investigate possible intervening factors in the association between perceived discrimination and mental health among undergraduate college students. Although previous studies have examined perceived discrimination, mentoring support, and academic self-concept as independent predictors of mental health outcomes, prior research has not assessed a comprehensive model including all these factors. Therefore, we tested a serial indirect effects model (Figure 1) to examine the direct and indirect effects of perceived discrimination, mentoring support, and academic self-concept on college students' mental health. Based on our literature review, we hypothesized a serial indirect effect whereby perceived discrimination (X) would be associated with mentoring support (M1), followed by academic self-concept (M2), and subsequently, mental health (Y). To the authors' knowledge, this is the first study examining the serial indirect effect of mentoring support and academic self-concept on the relationship between perceived discrimination and mental health.

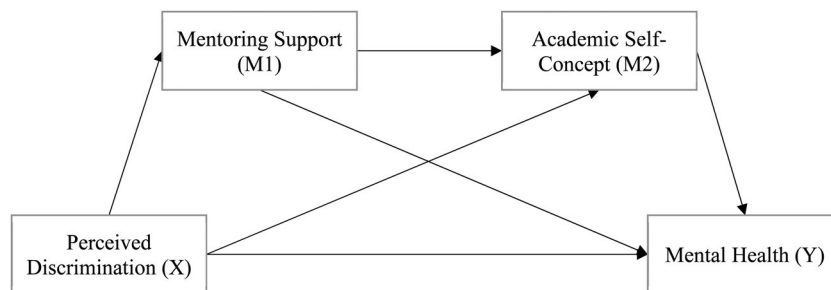


Figure 1. Hypothesized model of direct and indirect effects of perceived discrimination on mental health via mentoring support and academic self-concept.

Methods

Procedures

Participants completed a cross-sectional study on college student identity administered online via *Qualtrics*. Before participation, participants were informed about the nature of the study and provided informed consent. Following consent, participants completed a series of self-report measures. The survey took a median of 16 (IQR 12–22) minutes to complete. Upon completing the study, participants were provided with a debrief statement, which included additional reading material about identity development and the first author's contact information. We invited all participants to participate in a separate lottery to win one of two \$25 or three \$50 Amazon gift cards. The Institutional Review Board (IRB) at Haverford College provided approval for this study.

Participants

Participants were recruited through listservs at the authors' institution, social networking sites (e.g., Facebook, Instagram, Twitter), and snowball sampling. Recruitment materials were also distributed to a national scholarship program for first-generation, low-income students because of convenience. During February and March 2019, participants from colleges and universities representing 22 states in the United States and other countries completed the survey. To be included in the study, participants had to be (1) a currently enrolled student, (2) pursuing an undergraduate degree, (3) aged 18 to 25, and (4) able to understand all study procedures and provide informed consent.

A total of 394 completed responses were received. We excluded 79 (20.0%) responses from participants who did not meet inclusion criteria ($n=20$), failed pre-specified attention checks ($n=50$), and wished to be excluded from analyses ($n=9$). Thus, the final analytic sample consisted of 315 currently enrolled undergraduate students aged 18 to 25.

Table 1 provides the complete demographic profile of this group of participants ($N=315$). They ranged in age

from 18 to 25 ($M=20.19$, $SD=1.33$). Most participants identified their gender as female ($n=209$; 66.3%), their ethnicity as nonWhite ($n=178$; 56.5%), and their sexual orientation as heterosexual ($n=199$; 63.2%). Over 98.7% of students ($n=311$) were within their first four years of their undergraduate education, and the most frequent academic disciplines were in the social science fields ($n=125$; 39.7%).

Measures

Demographics

Information on participants' age, gender, ethnicity, sexual orientation, university size and location, class standing, and academic major was collected.

Table 1. Demographic characteristics of participants (N=315).

	<i>n</i>	%
Gender		
Male	87	27.6
Female	209	66.3
Non-binary	19	6.0
Ethnicity		
Non-Latinx White	137	43.5
Black	18	5.7
Latinx	55	17.5
Asian	54	17.1
Middle Eastern	4	1.3
Multiracial	47	14.9
Sexual orientation		
Straight/heterosexual	199	63.2
Gay/lesbian/homosexual	21	6.7
Bisexual	66	21.0
Pansexual	13	4.1
Asexual	11	3.5
Different identity	4	1.3
No response	1	0.3
Self-reported salient identity		
Gender	148	47.0
Ethnicity	137	43.5
Sexual orientation	30	9.5
Size of college/university		
Less than 1,000 students	6	1.9
1,000 to 2,999 students	239	75.9
3,000 to 9,999 students	22	7.0
10,000 to 15,000 students	13	4.1
More than 15,000 students	35	11.1
Location of college/university		
US Midwest	13	4.1
US Northeast	243	77.1
US South	10	3.2
US West	34	10.8
Outside US	10	3.2
No response	5	1.6
Class standing		
First year	75	23.8
Second year	68	21.6
Third year	81	25.7
Fourth year	87	27.6
Fifth year or beyond	4	1.3
Academic major		
Humanities	49	15.6
Natural sciences	110	34.9
Social sciences	125	39.7
Interdisciplinary	8	2.5
Undecided	23	7.3

Perceived discrimination

Perceived discrimination was measured using the Multidimensional Scale of Perceived Discrimination (MSPD).⁵⁵ The MSPD is a 20-item scale that measures general perceptions of discrimination among people of various minoritized identities. The items are rated on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Sample items include, "People of my [identity] suffer from rejection in their daily social relations" and "I have been treated unfairly for my [identity]." For this study, discrimination was assessed based on participants' self-reported salient identity (i.e., 47.0% gender, 43.5% ethnicity, or 9.5% sexual orientation). Consistent with conventional scoring guidelines,⁵⁵ we created an average composite score of the 20 items, with higher scores indicating more perceptions of discriminatory experiences related to the person's most salient identity ($\alpha=.94$). Cronbach's alpha for the three salient identities were .92 (gender), .95 (ethnicity), and .94 (sexual orientation), respectively.

Mentoring support

The College Student Mentoring Scale (CSMS)⁵⁶ assesses an individual's perceptions of mentoring support while in college. The scale consists of 25 Likert-type items rated from 1 (*strongly disagree*) to 5 (*strongly agree*) that assess the degree to which a student perceived they had someone during their college career that provided mentorship. Sample items include, "I have had someone who makes me feel that I belong in college" and "I have had someone whom I admire." We followed previous scoring methods⁵⁷ and created a total CSMS score by taking the mean of all 25 items, with higher scores denoting greater mentoring and mentorship quality ($\alpha=0.93$). Cronbach's alpha for the three salient identities were .93 (gender), .94 (ethnicity), and .94 (sexual orientation), respectively.

Academic self-concept

The Academic Self-Concept Scale (ASCS)⁵⁸ measures feelings and perceptions of academic competence among university-level students. The items are rated on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Sample items include, "If I work hard, I think I can go to graduate school/get a good job" and "I do not give up easily when I am faced with a difficult question in my coursework." We created a composite score for the ASCS from the average of the 20 items, based on standard scoring guideline,⁵⁸ with higher scores representing higher academic self-concept ($\alpha=.83$). Cronbach's alpha for the three salient identities were .85 (gender), .83 (ethnicity), and .60 (sexual orientation), respectively.

Mental health

Mental health was assessed using the Mental Health Continuum-Short Form (MHC-SF).⁵⁹ The MHC-SF

consists of 14 items on a 6-point Likert-type scale ranging from 0 (*never*) to 5 (*every day*) that assess one's mental health state. As a slight change in the present study, a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), instead of the original 6-point scale, was used to be consistent with other questionnaires. Participants rated items such as "I have felt interested in life" and "I have felt that I had warm and trusting relationships with others" for the prior month. We followed prior scoring methods⁶⁰ to create a mean total score of the 14 items, with higher scores indicating better mental health ($\alpha = .86$). Cronbach's alpha for the three salient identities were .87 (gender), .87 (ethnicity), and .72 (sexual orientation), respectively.

Data analytic strategy

Descriptive analysis and independent-samples t-test were used to describe and compare study variables by the demographic data (i.e., gender, ethnicity, and sexual orientation). Bivariate correlations were used to assess linear associations between study variables; no variables met multicollinearity criteria ($r > .80$). To examine the direct and indirect effects of perceived discrimination on mental health through mentoring support and academic self-concept, we used Model 6 of the PROCESS macro.⁶¹ This approach uses ordinary least squares regression analysis and bias-corrected 95% confidence interval based on 10,000 bootstrap samples. In our study model (Figure 1), the indirect effect of perceived discrimination (X) on mental health (Y) was tested according to three possible indirect effects: (1) through mentoring support only (M1), (2) through academic self-concept only (M2), and (3) through both mentoring support and academic

self-concept simultaneously (M1 and M2). We also conducted pairwise contrast analysis to identify and compare the variables' specific indirect effects to determine each indirect effect's relative magnitude. According to Hayes⁶¹ approach, indirect effects and their pairwise contrasts are statistically significant when the 95% bias-corrected confidence interval does not contain zero. Data analysis in the current study was conducted through IBM SPSS 26.0, with a significance level of $p = .05$.

Results

Preliminary analyses

Independent-samples t-test (Table 2) revealed that all study variables, except for mentoring support, were significantly different by gender, ethnic, and sexual identity. The main differences were between students' self-reported minoritized (e.g., non-male, non-White, nonheterosexual) or privileged (e.g., male, White, heterosexual) identities. Compared to students with privileged identities, perceptions of discrimination were higher for students with minoritized gender, ethnic, and sexual identities. Academic self-concept scores were also lower for students of minoritized gender, ethnic, and sexual identities than students with privileged identities. Moreover, students with minoritized gender, ethnic, and sexual identities indicated worse mental health than their peers with privileged identities. However, there were no significant group differences for mentoring support, despite students with minoritized identities reporting lower scores than students with privileged identities.

Table 3 displays the means, standard deviations, and correlations between the four main study variables. Perceived discrimination was negatively associated with

Table 2. Descriptive statistics and the distribution of study variables.

Gender (N=315)	Minoritized (n=228)		Privileged (n=87)		t	df	d
	M	SD	M	SD			
Perceived discrimination	3.18	0.78	2.47	0.99	-6.06***	129 [†]	.80
Mentoring support	3.48	0.72	3.56	0.70	0.85	313	.11
Academic self-concept	3.39	0.53	3.55	0.53	2.49*	313	.30
Mental health	3.18	0.71	3.37	0.70	2.14*	313	.27
Ethnicity (N=315)	Minoritized (n=178)		Privileged (n=137)		t	df	d
	M	SD	M	SD			
Perceived discrimination	3.27	0.76	2.61	0.93	-6.74***	260	.78
Mentoring support	3.43	0.72	3.60	0.70	2.03	313	.24
Academic self-concept	3.36	0.55	3.52	0.50	2.68*	313	.30
Mental health	3.12	0.72	3.37	0.68	3.15**	313	.36
Sexual Orientation (N=314)	Minoritized (n=115)		Privileged (n=199)		t	df	d
	M	SD	M	SD			
Perceived discrimination	3.27	0.81	2.82	0.91	-4.57***	262	.52
Mentoring support	3.46	0.67	3.53	0.74	0.88	312	.10
Academic self-concept	3.29	0.54	3.51	0.52	3.62***	312	.42
Mental health	2.98	0.70	3.38	0.68	4.87***	312	.60

Note. Italicized t-statistics denote comparisons with unequal variances assumed across groups based on Levine's Test for Equality of Variances.

[†]Fewer degrees of freedom are reported for perceived discrimination because the two groups had unequal variance for gender, ethnicity, and sexual orientation.

* $p < .05$, ** $p < .01$, *** $p < .001$.

mentoring support, academic self-concept, and mental health. Mentoring support and academic self-concept were also positively associated with mental health and with each other.

Ordinary least squares regression analyses

The results showed (Figure 2) a significant total effect ($c = -0.27$, $SE = 0.04$, $t[313] = -6.35$, $p < .001$) of perceived discrimination on mental health, such that those who reported greater discrimination reported worse mental health. In addition, perceived discrimination had a significant direct effect on both mentoring support ($a_1 = -0.11$, $SE = 0.04$, $t[313] = -2.37$, $p = .019$) and academic self-concept ($a_2 = -0.13$, $SE = 0.03$, $t[312] = -4.23$, $p < .001$), such that those who reported greater discrimination reported lower mentoring support and lower academic self-concept. Mentoring support also had a significant direct effect on academic self-concept ($a_3 = 0.25$, $SE = 0.04$, $t[312] = 6.41$, $p < .001$), such that those who reported greater mentoring support reported greater academic self-concept. A review of the direct effects on mental health showed significant direct effects from mentoring support ($b_1 = 0.29$, $SE = 0.05$, $t[311] = 6.25$, $p < .001$) and academic self-concept ($b_2 = 0.53$, $SE = 0.06$, $t[311] = -8.40$, $p < .001$), such that those who reported

greater mentoring support or greater academic self-concept reported better mental health.

When mentoring support and academic self-concept were added to the model (Figure 2), the direct effect of perceived discrimination on mental health was reduced but remained significant ($c' = -0.15$, $SE = 0.04$, $t[311] = -4.34$, $p < .001$), such that those who reported greater perceived discrimination also reported worse mental health. These results suggest indirect effects via mentoring support and academic self-concept on the link between perceived discrimination and mental health.

As seen in Table 4 and depicted in Figure 2, the results showed a significant total indirect effect through the combination of mentoring support and academic self-concept ($ab = -0.114$, $SE = 0.028$, $CI = -0.167$ to -0.060). Additionally, all paths of the relationship between perceived discrimination and mental health had a significant specific indirect effect. There was a significant indirect pathway for perceived discrimination through mentoring support only ($a_1b_1 = -0.030$, $SE = 0.015$, $CI = -0.062$ to -0.001). Greater levels of perceived discrimination were associated with lower mentoring support and, in turn, worse mental health. In addition, there was a significant indirect pathway for perceived discrimination through academic self-concept only ($a_2b_2 = -0.069$, $SE = 0.018$, $CI = -0.105$ to -0.036). Greater levels of perceived discrimination were associated with lower academic self-concept and, in turn, worse mental health. Moreover, there was a significant indirect pathway for perceived discrimination through mentoring support and academic self-concept in a sequential manner ($a_1a_3b_2 = -0.014$, $SE = 0.008$, $CI = -0.031$ to -0.001). Greater levels of perceived discrimination were serially associated with lower mentoring support and lower academic self-concept, and, in turn, worse mental health. The overall model was shown to

Table 3. Means, standard deviations, and correlations among study variables.

	<i>M</i>	<i>SD</i>	1	2	3
1. Perceived discrimination	2.98	0.90	–	–	–
2. Mentoring support	3.50	0.72	-.13*	–	–
3. Academic self-concept	3.43	0.54	-.26**	.36**	–
4. Mental health	3.23	0.71	-.34**	.46**	.56**

Note. $N = 315$. * $p < .05$, ** $p < .01$.

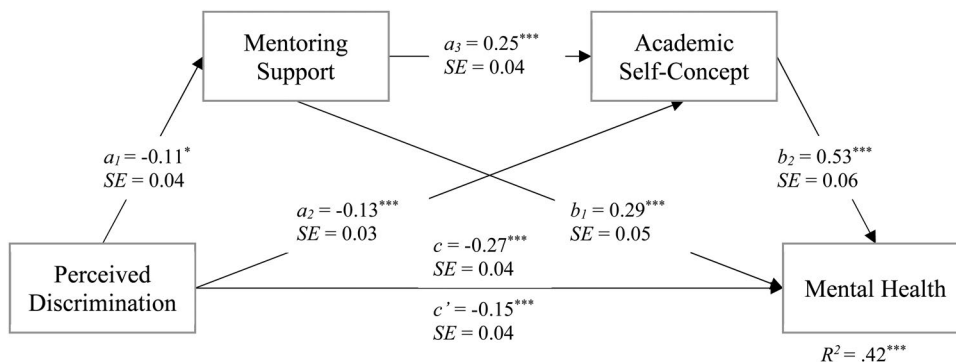


Figure 2. Illustration of direct and indirect effects of perceived discrimination on mental health via mentoring support and academic self-concept. Values shown are unstandardized regression coefficients. Note. $N = 315$. a_1 = direct effect of perceived discrimination on mentoring support; a_2 = direct effect of perceived discrimination on academic self-concept; a_3 = direct effect of mentoring support on academic self-concept; b_1 = direct effect of mentoring support on mental health; b_2 = direct effect of academic self-concept on mental health; c = total effect of perceived discrimination on mental health, without accounting for mentoring support and academic self-concept; c' = direct effect of perceived discrimination on mental health when accounting for mentoring support and academic self-concept; Total Indirect Effect (ab) = $a_1b_1 + a_1a_3b_2 + a_2b_2$ (perceived discrimination influences mental health through various specific effects); a_1b_1 = specific indirect effect through mentoring support; $a_1a_3b_2$ = specific indirect effect through both mentoring support and academic self-concept, in serial; a_2b_2 = specific indirect effect through academic self-concept. For specific total and indirect effect results, refer to Table 4. * $p < .05$, *** $p < .001$.

Table 4. Specific indirect effects and comparison of indirect effects of perceived discrimination on mental health through mentoring support and academic self-concept.

Effect	Products of Coefficients		95% BC CI	
	Estimate	SE	LL	UL
Total indirect effect	<i>-0.114</i>	<i>0.028</i>	<i>-0.167</i>	<i>-0.060</i>
Mentoring support	<i>-0.030</i>	<i>0.015</i>	<i>-0.062</i>	<i>-0.001</i>
Academic self-concept	<i>-0.069</i>	<i>0.018</i>	<i>-0.105</i>	<i>-0.064</i>
Mentoring support → Academic self-concept	<i>-0.014</i>	<i>0.008</i>	<i>-0.031</i>	<i>-0.001</i>
Contrasts				
Mentoring support vs. Academic self-concept	0.039	0.024	-0.008	0.087
Mentoring Support vs. Mentoring support → Academic self-concept	-0.017	0.011	-0.041	0.001
Academic self-concept vs. Mentoring support → Academic self-concept	-0.055	0.019	-0.094	-0.017

Note. Indirect effects are presented as unstandardized regression coefficients and their respective confidence intervals. Italicized indirect effects indicate significant indirect effects based on the 95% bias-corrected confidence interval not containing zero. $N=315$. BC CI=bias-corrected confidence interval; LL=lower limit; UL=upper limit.

be significant ($F_{(3, 311)} = 75.33, p < 0.001$) and explained 42.08% of the total variance in mental health.

After analyzing the complete model, pairwise comparisons determined whether specific indirect effects were stronger than others. As shown in Table 4, pairwise contrasts analyses revealed that the specific indirect effect through mentoring support did not differ from the specific indirect effect through academic self-concept (estimate = 0.039, $SE=0.024$, $CI = -0.008$ to 0.087) nor the serial indirect effect (estimate = -0.017, $SE=0.011$, $CI = -0.041$ to 0.001), suggesting that they had equitable contributions to the model. However, the specific indirect effect through academic self-concept was larger than the serial indirect effect (estimate = -0.055, $SE=0.019$, $CI = -0.094$ to -0.017).

Discussion

The present study examined a hypothesized model (Figure 1) of the direct and indirect effects among college students' perceived discrimination, mentoring support, academic self-concept, and mental health. Based on college student literature and previously established relationships,^{1,23,30,38,43,53} reoccurring discriminatory experiences are a predictor of poor mental health outcomes, and this relationship may be influenced by outside factors such as whether a student has a mentor and the student's self-perception of their academic abilities. Therefore, we proposed a hypothesized model (Figure 1) whereby mentoring support (M1) served as the first indirect effect and academic self-concept (M2) served as the second indirect effect, in the relationship between perceived discrimination (X) and mental health (Y).

Based on the findings, we found that mentoring support and academic self-concept are individually and collectively associated with mental health among college students who report discriminatory experiences. Our model (Figure 2) identified three significant indirect paths, such that (1) less mentoring support alone (a_1b_1), (2) low academic self-concept alone (a_2b_2), and (3) both factors ($a_1a_3b_2$) were collectively associated with greater

mental health concerns for college students who perceived greater discrimination against themselves. The findings revealed that students with more discrimination experiences had worse overall mental health, with lowered mentoring support and reduced academic self-concept each individually explaining a portion of the overall relationship between discrimination and mental health. Furthermore, mentoring support and academic self-concept collectively contributed to the association between perceived discrimination and mental health. Consistent with prior literature,^{10,50,62,63} mentoring support and academic self-concept served as key intervening factors in the relationship between perceived discrimination and mental health. The findings specifically displayed that mentoring support and academic self-concept are related and operate together but are not overlapping variables. To the best of our knowledge, this study is the first to show that perceived discrimination has a direct effect on mental health and has an indirect effect on mental health via mentoring support and academic self-concept.

Our primary finding is the collective association of mentoring support and academic self-concept on the relation between perceived discrimination and mental health. In this group of college students, greater perceived discrimination predicted lower mentoring support, followed by lower academic self-concept, and, then finally, worse overall mental health. For those who reported more discrimination, it could be that managing this additional stress reduces one's engagement with prospective mentors, thereby hindering one's academic development and, ultimately, increasing the risk for mental health concerns. This study builds on prior findings that social support⁶³ and intellectual self-doubt^{10,62} are associated with mental health outcomes, such as anxiety and depression, in college students who report frequent encounters with discrimination. For example, college students who are less engaged with mentors may be less able to cope with discrimination, and that lack of coping strategies does not serve as a protective factor to buffer the adverse effects of discrimination on mental health.^{64,65} Relatedly, reduced perceptions of one's academic abilities exacerbate mental health concerns as college students who face discrimination may feel like outsiders and doubt their

sense of belonging.^{10,66} Future studies might examine these and other potential underlying factors in the relationship between perceived discrimination and mental health to develop preventative interventions in college settings.

In addition to our main finding, a significant difference was found between the intervening effects of mentoring support and academic self-concept on the relationship between perceived discrimination and mental health, such that the indirect effect of academic self-concept alone contributed more to the model than the collective indirect effect of mentoring support and academic self-concept. This finding suggests that although mentoring support and academic self-concept, individually and collectively, explain the relationship between perceived discrimination and mental health, self-perception of one's academic ability has the most significant influence on the mental health of those who face frequent discrimination experiences. For college students who hold low regard for themselves academically, the culmination of stress from discriminatory treatment and low academic self-concept may exacerbate their risk of mental health concerns.^{67,68} Further research is needed to understand why and how academic self-concept, perceived discrimination, and mental health are related to each other; longitudinal research observing college student development over time may help answer important questions about the temporality of these effects and, accordingly, appropriate points of intervention.

Additionally, this study replicated previously reported findings on the direct effects of perceived discrimination, mentoring support, academic self-concept, and mental health.^{17,25,32,39,48,53} In our sample, college students who reported greater discrimination perceived less access to mentors, viewed themselves as less academically competent, and had worse mental health than those who reported fewer discrimination experiences. The results also revealed that greater mentoring support and higher academic self-concept were associated with greater overall mental health and that greater mentoring support predicted higher academic self-concept. The findings add to the evidence base that exposure to discrimination experiences can have adverse effects on a college student's academic life and mental health and that the presence of a support system can have beneficial effects on a college student's overall well-being. Future investigation is warranted to ascertain the nature of minoritized identities within mental, social, academic outcomes, such that experiences likely vary according to a student's group membership. Studies may consider whether specific minoritized identities have a greater impact on mental health or if mentoring support and academic self-concept are a more protective factor for specific minoritized identities. Additional research directions to consider in future work include examining how discrimination prevention efforts and different mentoring strategies can promote positive mental health outcomes.

Overall, this study adds to the current literature on college student mental health by revealing the

possibilities of mentoring support and academic self-concept as pathways in explaining the link between perceived discrimination and mental health. Our findings provide a more comprehensive viewpoint to the question of why college students who are discriminated against tend to experience mental health concerns, with implications for intervention at multiple points.

Limitations

The results of the present study should be considered in the context of several limitations. First, the data is cross-sectional and correlational. Thus, the study cannot establish causal or temporal relations between the variables. Links between study variables may also be bidirectional, with academic self-concept, mental health, or perceived discrimination, perhaps influencing mentoring support. Future studies may utilize prospective, longitudinal research to determine the true ordering of these variables. Second, the present study used a convenience sample which limits the findings to this particular sample. Participants were predominately from a small, private liberal arts college in the Northeastern region of the United States, so the current findings may not be generalizable to students at large, traditional universities in other locations. Moreover, given that first-generation, low-income college students often identify with a minoritized ethnic group,⁶⁹ our recruitment through a national scholarship program for low-income, first-generation may have influenced the sample demographics. Therefore, future research on college students should sample from diverse postsecondary education settings, across urban, suburban, and rural geographic areas, for a more thorough understanding of college students' experiences and the relationships among the observed variables for college students in such settings. Third, participants used their understanding and definition of the term "discrimination" because of limitations with the chosen discrimination measure. As a result, the current study examined discrimination broadly and does not assess specific forms of mistreatment, harassment, and discrimination (e.g., psychological, emotional, physical, and sexual acts of aggression). Further research with comprehensive measures is needed to capture an accurate understanding of how minoritized groups experience discrimination on college campuses.

Implications

Our findings are particularly relevant to diversity and inclusion initiatives as colleges and universities strive to create equitable and welcoming environments for all students. A common initiative in higher education has focused on improving outreach and recruitment of diverse, prospective students to provide equal educational opportunities and increase student body diversity. Our findings suggest that discrimination prevention and

mentoring programs can help with college transition and retention issues and, thus, should be prioritized in diversity and inclusion initiatives as they may influence admitted students' adjustment and outcomes.

College is a stressful experience as students face challenges not only in their classes but also in their social environments, such as marginalization, discrimination, and harassment, which may be especially the case for college students with minoritized identities.^{1,2,6,7} These social stressors may lead to poor mental health outcomes, such as psychological distress, anxiety, and depression.^{4,11,12,14} Thus, it is crucial to identify factors that contribute to and reduce mental health concerns among college students. Our results indicated that perceived discrimination is a risk factor for mental health concerns and that underlying modifiable mechanisms explain this relationship. These mechanisms include mentoring support and academic self-concept, both of which were protective factors that offset the relationship between discrimination and mental health distress.

The current study has important practical implications for college transition and retention strategies. First, the findings indicate it could be advantageous for higher education administrators to perform routine assessments of students' campus-wide experiences with discrimination, mentoring support, and academic self-concept to identify areas of improvement in the campus climate. Campus climate assessments allow administrators to understand issues at their institutions and methods for improving student outcomes. When institutions invest in understanding the campus climate and promoting diversity, students are less likely to experience discrimination.⁷⁰ Second, the results suggest it would be beneficial for academic departments to implement programs designed to help students identify prospective mentors and develop academic confidence to offset the harmful effects of discrimination and ease their college adjustment. Faculty advisors and upper-level peers may be beneficial as they help navigate students through the unfamiliar higher education environment. Specifically, one-on-one and individualized mentoring can enhance students' academic performance and well-being.⁷¹ Lastly, the findings suggest it would help student affairs divisions to modify first-year experience programs by integrating discrimination prevention education to serve as an initial point of contact for addressing personal prejudices. First-year experience programs focused on creating an inclusive community may improve the social integration of all students. Students who perceive a stronger sense of community and connection to their institution display a higher likelihood of academic persistence.⁷² Overall, our study suggests that addressing discrimination, creating supportive mentoring relationships, and facilitating academic growth are critical modifiable factors that should be considered in developing college transition and retention programs.

Conclusion

The present study was the first to explore the individual and collective association of mentoring support and academic self-concept on the mental health of college students with discrimination experiences. We found that the relationship between perceived discrimination and mental health is influenced by inadequate mentor relationships, lack of academic competence, and both factors collectively. Specifically, greater perceived discrimination predicted reduced mentoring support, followed by decreased academic self-concept and, then, worse overall mental health. Our findings suggest that decreasing discriminatory experiences, improving access to mentor relationships, and fostering positive academic self-concept may serve as preventative measures for college students' mental health concerns.

Conflict of interest disclosure

The authors have no conflicts of interest to report. The authors confirm that the research presented in this article met the ethical guidelines, including adherence to the legal requirements, of the United States and received approval from the Institutional Review Board of Haverford College.

Author note

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Note

†. The term "minoritized" refers to people who are mistreated or discriminated against for their different identities (e.g., gender, ethnicity, sexual orientation) based on systems of oppression, whereas the term "minority" refers to people of a certain identity group which is numerically smaller than the majority group in society³. A minoritized identity may comprise a large portion of a population (constituting a "majority" status) and continue to be marginalized. Therefore, we use the term "minoritized" to highlight the social contexts, rather than statistics, which fuel the marginalization of non-male, non-White, and non-heterosexual identities.

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