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The role of self-efficacy in the relationship between discrimination and health care utilization among college students in the United States

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Abstract

Introduction: This study is an investigation of the direct and indirect effects of experiences of discrimination on health care utilization among young college students.

Methods: One hundred and eighty-five students completed an online survey. Measures included experiences of discrimination, outcome expectations, self-efficacy, attitudes, and demographic variables. The relationships tested were informed by Andersen's Behavioral Model of Health Services Use, which has been modified as it oversimplified the role of ethnicity as a predictor. Regression and mediation analysis were conducted.

Results: Self-efficacy to communicate with physicians was a significant direct predictor of health care utilization ($t = 2.965$, $P = .003$), although experiences of discrimination were not. The

effects of discrimination on health care utilization were further found to be mediated by self-efficacy to communicate with physicians (95% CI [-.0907, -.0025]).

Conclusion: These findings provided support for the inclusion of psychosocial variables (i.e., self-efficacy) in Andersen's model to increase its explanatory power.

KEY WORDS: College students; discrimination; health care utilization; mediation analysis; racism; self-efficacy.

Riassunto

Introduzione: Questa è uno studio sugli effetti diretti e indiretti delle esperienze di discriminazione sull'utilizzo dell'assistenza sanitaria tra i giovani studenti universitari.

Metodi: Centottantacinque studenti hanno completato un'indagine online. Le misure includevano esperienze di discriminazione, aspettative di risultato, autoefficacia, atteggiamenti e variabili demografiche. Le relazioni testate sono state informate dal modello comportamentale di Andersen sull'uso dei servizi sanitari, che è stato modificato in quanto semplifica eccessivamente il ruolo dell'etnia considerata come predittore. Sono state condotte analisi di regressione e di mediazione.

Risultati: L'autoefficacia nel comunicare con i medici è stata un fattore predittivo diretto significativo dell'utilizzo dell'assistenza sanitaria ($t = 2.965$, $P = .003$), sebbene le esperienze di discriminazione non lo fossero. È stato inoltre riscontrato che gli effetti della discriminazione sull'utilizzo dell'assistenza sanitaria sono mediati dall'autoefficacia per comunicare con i medici (95% CI [-.0907, -.0025]).

Conclusioni: Questi risultati hanno fornito supporto per l'inclusione delle variabili psicosociali (ovvero l'autoefficacia) nel modello di Andersen per aumentare il suo potere esplicativo.

TAKE-HOME MESSAGE: Experiences of discrimination have an indirect effect on the health care utilization by college students. As college students experience more discrimination, their self-efficacy to communicate with physicians decreases, leading to lower rates of health care utilization.

Competing interests: none declared

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INTRODUCTION

Although young adults are generally a healthy population, researchers have found that college-aged adults are in a vulnerable position when it comes to health care utilization. Compared to adolescents (13-17 years old), young adults (18-25 years old) tend to have fewer resources, are frequently uninsured, and have the highest rates of preventable diseases [1–3]. During adolescence, enabling factors that allow the person to use the health care system (e.g., insurance) are typically the responsibility of the parents. Transitioning to young adulthood brings more responsibility over one's health and health care, which potentially contributes to barriers to

health care utilization. Callahan and Cooper [1] found that during the transition to young adulthood, acute health risks, mortality, and rates of chronic diseases increase. Few researchers have addressed college students' health care utilization, however, despite this being the population with the lowest rate of health care utilization [2]. These low rates, combined with high numbers of preventable diseases among young adults, draw attention to the need of developing preventive care focused on this specific population.

Among a young adult population, racial and ethnic minorities groups are less likely to use health care services overall [2, 4]. Fortuna and colleagues [4] found that compared to older adults and adolescents, young adults have the lowest rates of utilization and preventive care. African American and Hispanic men were found to be less likely to engage in preventive care and to use health services compared to White young adults, even though they are at higher risk of death. College students are in a particularly vulnerable population, as freshmen with chronic illnesses have been found to have less quality of life compared to healthy freshmen, and less than 15% of chronically ill students have been found to be connected with university resources [5]. Identifying specific variables in which medical providers can be trained in, such as how to better communicate with students, is an important step in bridging this gap, particularly for marginalized students.

Discrimination and health

Discrimination is defined as attitudes, beliefs, acts, and institutional arrangements that tend to treat a person or group as inferior because of ethnic group or phenotypic characteristics [6]. Racism can be understood broadly as both group and individual processes that maintain racial inequality, frequently in subtle ways. At an individual level, racism relates to forms of social stress, having psychological and physiological effects – not only from actual events, but also on the individual's perceived threat posed by a stressor. For that reason, perceived racism can be

present in cultural, institutional and individual situations [7]. One of the ways in which racism is apparent is through health care disparities – marginalized groups (e.g., African Americans, Native Americans, Hispanic and Latino/a) have higher mortality rates compared to dominant groups, tend to receive unequal medical treatments compared to White Americans, and are less likely to have health insurance. Racial and ethnic disparities within health care remain even after accounting for socioeconomic differences and access to health care, and have been associated with worse health outcomes [8].

The unpredictability and unexpectedness of racist events affect the well-being of people of color, who expect negative outcomes in everyday situations [9]. Perceiving racial discrimination has been found to be a barrier to appointment attendance for African Americans, further increasing health disparities [10]. In a review of studies on racism and health outcomes, racism was found to be a large contributor to health disparities and psychophysiological paths that may lead to illness [11]. Racism may affect health both directly and indirectly. Indirect effects on health outcomes occur when discriminatory societal structures shape the health-related behavior of a group [60]. The direct effect of racism on health can be observed by psychophysiological processes that directly connect racism to disease [11]. Experiences of discrimination have been associated to negative mental health outcomes, such as psychological distress, suicidal ideation, anxiety, and depression, in a sample of Asian American and Latino college students [12]. In a national sample of 2,315 ethnic minority students (i.e., Black and Latino college students), Brittian and colleagues [13] found perceived ethnic discrimination was associated with depressive symptoms. A recent meta-analytic review also found that exposure to racism has been significantly related to depressive symptoms and low motivation and academic achievement for adolescents [14]. Further, in a sample of over 43,000 college students, researchers have found that students of color are significantly less likely to seek mental health treatment [15].

Researchers have also found significant disparities in health care utilization for college students, regardless of universal access and insurance coverage [16].

Cultural and racial background permeates how one understands and explains health and sickness, which might influence the health care utilization of different populations [17]. Additionally, the unpredictability of racist acts may cause people of color to expect negative outcomes of any given behavior [9], and perceived racial discrimination has been found to be a barrier to appointment attendance [10] and long-term care [18].

Health care utilization and race and ethnicity

Health care utilization is understood as the link between the patient's personal demands and the health care system [19]. Several different models to better understand health care utilization have been proposed [20], but the Andersen's Behavioral Model of health care use [21-23] is widely adopted, given it incorporates individual and contextual determinants of utilization, and its significant influence on policy making [24, 25].

The Andersen's Behavioral Model of health care use [19, 23] is a multilevel model that encompasses individual and contextual determinants of health care use. The individual and contextual determinants are separated into predisposing, enabling, and need factors. Predisposing factors are elements that predispose the person to use health services, enabling factors are related to the person's ability to use health services, and need factors are linked to the perception of illness. The model also encompasses a feedback loop, in which experiences in the health care system influence future utilization. Using electronic health records from twenty-three universities, Turner and Keller [26] found that college students of color have slightly higher rates of health care utilization compared to White students. However, determinants of health care utilization for students of color tend to be different, as racism exposure has been associated with poor psychological functioning for African American college students [27], and discrimination

has been found to be associated with worst adjustment for college students [28]. Although there is an upward trend in mental health service utilization in the past decade for American college students [29], students from marginalized racial and ethnic groups have lower mental health care services utilization, which has been found to be negatively impacted by stigma and acculturation [30]. Further, students of color have been found to have similar prevalence of mental health symptoms compared to White students, but lower treatment utilization overall [15].

Andersen's behavioral model has been criticized for over emphasizing individual factors and under emphasizing social issues and availability of health care, disregarding how social factors act as determinants of health care utilization [31]. Race and ethnicity are predisposing factors in the Andersen's model, and are considered as negative predictors of health care utilization. This linear relationship between utilization and race and ethnicity may oversimplify its role as a determinant of utilization, which influences predisposing, enabling, and need factors simultaneously [18]. The Andersen's Behavioral Model uses race and ethnicity as a predictor variable of health care utilization however, race lacks precise meaning, and given its categorical nature, it does not allow for within-group variability, and cannot be used to explain psychological phenomena [32]. The model does not directly address how cultural factors, such as discrimination, influence health care utilization among marginalized populations. Although useful to aid in the study health care utilization, with the current study we intend to expand the explanatory power and complexity of Andersen's model. Hence, the proposed study will focus on how experiences of discrimination influence health care utilization among young adults.

Social Cognitive Theory and health care utilization

The Social Cognitive Theory (SCT) [33, 34] is a dynamic model, in which performing a given behavior is influenced by personal goals, outcome expectancies, and self-efficacy. Outcome expectancy reflects the person's expectations to a behavior's outcome, and self-efficacy is one's

confidence they can perform the behavior to produce the expected outcome. Efficacy may be a strong determinant of one's chosen activity given the appropriate incentives and required skills. However, outcome expectations may have a unique contribution to motivation when the outcome is not completely controlled by quality of performance. That is, when other factors that the person cannot control affect outcomes, such as social structures and norms, their motivation decreases, because their performance does not produce noticeable differences [35]. SCT has been previously used as a framework to predict health care utilization, as self-efficacy has been found to predict health promoting self-care behaviors in pre-diabetic patients in a sample of Taiwanese participants [36].

Study objectives and hypotheses

Based on a review of the literature, racist discrimination has been found to be related to poor health outcomes [11] and appointment attendance [10]. The proposed study aimed to enhance the explanatory power of Andersen's Behavioral Model of health services use [19, 23] for young adults, by addressing how experiences of discrimination and self-efficacy are associated with low health care utilization. Specifically, we hypothesized that experiences of discrimination would be significant predictors of health care utilization (H1). We also hypothesized that self-efficacy to use the health care system would be a significant mediating variable between experiences of discrimination and health care utilization for college students (H2).

METHODS

Study participants and sampling

We used a cross-sectional design to investigate the direct and indirect effects discrimination has on health care utilization. Participants were recruited from a university's introductory class. Additionally, to extend the reach of the study and ensure adequate minority student sample size,

the study was advertised on listservs from student organizations representing the university's students of color.

The sample was non-probabilistic, and inclusion criteria was (a) being a college student of color currently enrolled in classes, and (b) being 18 years old or older. College students are a good population to study health care utilization, as it is possible to control for health care access. All students were required to be covered by health insurance to be enrolled in classes, and they had convenient access to the Student Health Center services.

A series of a priori power analysis were conducted using G*Power 3.1.9.2, to estimate the number of participants necessary to have a power of .80. The results for the most complex analysis, a hierarchical multiple regression with 8 predictors (one for each scale used in this study), indicated that 159 participants would provide a power of .80 to detect a small-to-medium effect (0.10), maintaining an alpha of .05.

For the purpose of this study, the dependent variable (DV) was self-reported health care utilization, whereas the independent variables (IV) were demographic information (e.g., age, gender, race, social class), experiences of discrimination, self-efficacy, outcome expectations, and attitudes toward health care.

Study instruments and measures

Demographic information was gathered with a questionnaire created specifically for this study. The questionnaire included information on age, gender, race, ethnicity, year in school, college major, perceived social class growing up, and level of education achieved by parents. Additional information was requested regarding whether the participant had health insurance coverage before entering the university, and whether they were still covered by their parents' insurance.

Experiences of Discrimination

Experiences of discrimination was measured using the Brief Perceived Ethnic Discrimination Questionnaire - Community Version (Brief PEDQ-CV) [7]. The Brief PEDQ-CV consists of 17 items assessing perceived exposure to ethnic discrimination. There are 4 subscales within this instrument, each assessing a different subtype or perceived exposure to ethnic discrimination: exclusion/rejection, stigmatization/disvaluation, discrimination at work/school, and threat/aggression. Participants were asked to respond to all items using a 5-point Likert-type scale ranging from 1 (never) to 5 (very often). The internal consistency (Cronbach's α) of PEDQ-CV for the current study was .93 for the total sample, .94 for students of color, and .90 for White students.

General self-efficacy

Self-efficacy was measured by the New General Self-Efficacy Scale (NGSE) [37]. The NGSE scale was designed to measure general self-efficacy, a construct defined as people's perception of their ability and their competence to perform any given behavior. Eight items are rated on a five-point Likert-type scale (from strongly agree to strongly disagree). The mean of the ratings represents the individual's overall self-efficacy, where higher scores reflect higher perceived self-efficacy. In the current study, there was a high internal consistency (Cronbach's α) for the total sample (.94), students of color (.95), and White students (.93). Global self-efficacy measures may decontextualize self-efficacy beliefs, measuring self-efficacy as a personality trait rather than a context specific judgment. This may create problems regarding prediction aspects of the self-efficacy construct, since the respondent does not have a specific behavior in mind when responding [38]. For that reason, a behaviorally specific scale was included on the study.

Health care self-efficacy

Self-efficacy towards health care use was measured using the Self-Efficacy to Communicate with Physicians (SEMD) and the Self-Efficacy to Manage Disease in General (SEDS) [39]. The

SEMD was designed to measure how confident a person is that they can ask the doctor about things of concern, discuss openly any personal problems related to illness, and work out differences that may arise with the physician. The SEDS was designed to measure how confident a person is to manage his or her symptoms on a regular basis, to judge whether or not to visit a physician, to perform tasks aimed at managing the illness and reducing the need to see the physician, to reduce the emotional distress caused by the condition, and to perform tasks other than taking medication to reduce effects of illness on daily life. In the current study the internal consistency (Cronbach's α) of SEMD was .91 for the total sample, .93 for students of color, and .88 for White students. For SEDS, the internal consistencies were .88 for the total sample, .89 for students of color, and .86 for White students.

Health care outcome expectations

Outcome expectations related to health care use was measured with items developed specifically for this study. Outcome expectations are by definition behavior-specific, because the participant must have a particular behavior in mind to consider the expected outcomes. Because of this specificity, psychometrically validated scales of outcome expectations are not common. Outcome expectations are typically measured on a Likert scale, with items that reflect positive and negative outcomes of a given behavior, and participants indicate to what extent they expect the behavior to lead to the presented outcomes [40–42]. In this study, items related to the behaviors measured in SEDS and SEMD were included as a measure of health care outcome expectations. For this sample, Cronbach's α was .78 for the total sample, .81 for students of color, and .73 for White students.

Attitudes toward medical care

Attitudes toward medical care and the health care system was measured using two scales. First, the Health Care System Distrust Scale (HCSDS) [43] to measure the distrust of the health care

system, which encompasses possible reasons for distrust as related to competence, honesty, confidentiality, and fidelity. Internal consistency (Cronbach's α) for the current study was .75 for the total sample, .73 for students of color, and .76 for White students. Also included in this study was a measure of medical skepticism. The Skepticism scale [44] is an instrument designed to measure doubts whether the conventional medical care is capable to alter one's health status, which also reflects attitudes toward health care. Although the scale had acceptable reliability in the original study (Cronbach's $\alpha = .69$), there were no further tests of validity for the scale, which warrants care on its use. In the current study, the internal consistency (α) for the total sample was .71, .76 for students of color, and .64 for White students.

Social Status

Social Status was measured using the MacArthur Scale of Subjective Social Status - Youth Version (MacArthur – Youth) [45]. The MacArthur - Youth Version is a visual scale that consists of a drawing of a ladder on which people place themselves. The instrument consists of two parts: one assessing the placement in the US society, and one assessing personal placement in the school community.

Health care utilization

The outcome variable of health care utilization was measured by self-reported hospital utilization and physician visits in the past year. For that reason, the reports of any visits to the student health center (and any unit within the health center) or other health settings were the focus of the study. Several different indexes of utilization have been used in health research [25], but no standard measure has been consistently used. Health care utilization has been previously measured by checking the patients' medical records [46], by recording the number of office visits in longitudinal studies [47], and by self-reported clinician visits [48]. As HIPPA protects patients'

medical records in the US, self-reported health care utilization was chosen as a method as it provides an inexpensive and simple alternative.

Ethical aspects

Following approval from the university's Institutional Review Board, participants were recruited from an introduction to psychology class, and received course credit for participation. The procedures followed were in accordance with ethical standards and with the Helsinki Declaration of 1975, as revised in 2000. Our procedures were approved by the institutional ethics review board, and we strictly adhered to responsible practices on human experimentation. Participants provided written consent to participation, which was kept separately from their responses. Their responses to the online survey were also kept anonymous, with no identifying information requested. Further, data was kept in a secure and password protected hard drive, to which only the corresponding author has access. Lastly, to ensure anonymity, their IP addresses were not recorded.

Statistical analysis

In the first step, all variables were checked for normality, and scores were logarithmic transformed if necessary. Hierarchical regression analyses were conducted to assess which of the variables of interest were significant predictors of health care utilization among college students. The hierarchical regression analyses consisted of five different steps. Demographic variables (i.e., age, subjective social status, gender, sexual orientation, ethnicity) were included in the first block to control for their variance on health care utilization. Experiences of discrimination were included in the second step, outcome expectations of health care use were included in the third step, the self-efficacy measures (both general and behavior-specific) were included in the fourth step, and attitudes toward health care was included in the fifth and final step to assess if they significantly improve the prediction of health care utilization.

Although there are multiple ways of testing mediation, Preacher and Hayes [49, 50] suggested a bootstrapping technique with 5,000 resamples. The mediation analyses were conducted to test whether self-efficacy to communicate with the physician mediates the relationship between discrimination and health care utilization. Preacher and Hayes [49, 50] method was used as it improved on previous methods of testing mediation, as it accounts for the indirect effects of the mediator on the dependent variable. Mediation analyses assess the effects of the independent variable (IV) on the dependent variable (DV), through a mediating (M) variable (i.e., indirect effect). Hence, it is possible to assess the indirect effects of the IV on the DV. In this simple mediation model, a pertains to the slope coefficient of M regressed on the IV, whereas b refers to the coefficient of the DV regressed on M while controlling for the effects of the IV. Further, c' denotes the coefficient of the DV regressed on the IV controlling for the effects of M. Lastly, c refers to the direct effect of the IV on the DV in the absence of M. To test the mediation with a bootstrapping analysis, the sampling distribution is calculated in multiple resamples (i.e., analogues of original sample) of the data set. By sorting the bootstrap values, bounds of a confidence interval can be defined. For the purposes of hypothesis testing, the null hypothesis is rejected when the 95% confidence interval does not include 0, opposed to using arbitrary conditional values of significance [51]. Inconsistent mediation, on the other hand, refers to a mediated relationship in which the mediator suppresses the effect, reducing the magnitude of the effect of the IV on the DV [52]. The mediation analysis was conducted using Preacher and Hayes [50] PROCESS macro for SPSS, to examine the indirect effects of discrimination on health care utilization. P value was set at $P < 0.05$

RESULTS

The final sample for this study was comprised of 185 university students, who were recruited from an introductory class, and received course credit for their participation. The mean age was 20.58 years old ($SD = 3.071$). The sample's demographic information can be found in Table 1. The majority of the participants identified as women (66.5%). Two participants identified as transgender (one as nonbinary, and one as Female-to-Male). Given the low n , these transgender participants were excluded from further analyses as the results would not be generalizable to them.

Table 1. Socio-demographic information of participants ($n = 185$).

Characteristics	<i>n</i>	%
Gender		
Female	123	66.5
Male	60	32.4
Transgender	2	1.1
Sexual Orientation		
Gay	4	2.2
Lesbian	2	1.1
Heterosexual	155	83.8
Bisexual	16	8.6
Self-identify	8	4.3
Ethnicity		
African-American/Black	51	27.6
Native-American	2	1.1
Asian-American or Pacific Islander	5	2.7
Hispanic/Latino or Latina	20	10.8
White	94	50.8

Multi-Ethnic	6	3.2
Other	7	3.8
Social Class growing Up		
At or below the poverty line	7	3.8
Lower class	14	7.6
Working class	29	15.7
Lower-middle class	29	15.7
Middle class	64	34.6
Upper-middle class	38	20.5
Upper class	3	1.6
Other	1	0.5
Parents' education		
Less than high school education	9	4.9
High school or GED	31	16.8
Some college education	43	23.2
Associates degree/technical degree	17	9.2
Bachelor's degree	51	27.6
Masters degree	24	13
Doctorate or professional degree	10	5.4

The average utilization of health care services in the year prior to data collection reported by participants was 6.28 visits ($SD = 6.499$, ranging from 0 - 40). The health care utilization mean for White students was 6.36 ($n = 94$, $SD = 5.877$), and for students of color it was 6.19 ($n = 91$, $SD = 7.116$). Students of color's total health care utilization was not significantly different from White students health care utilization ($t(183) = 0.1774$, $P = .8594$). Overall, participants took an average of 20 minutes to complete the survey. Although all college students had the same access

to health care, as all students are required to have health insurance, their utilization was not restricted to student health services. Regarding utilization of Student Health Services in particular, students had an average yearly use of 2.68 visits per year ($SD = 4.05$). In this study, to address utilization patterns across settings, the self-reported total visits to health care services was used.

Utilization data is typically examined using regression analyses, however, it does not always meet the necessary assumptions of normality, homoscedasticity, and independence of observations [53]. Health care utilization data tend to have a mode at zero and a long right tail, not meeting the normality assumption. Utilization data also tend not to meet the assumption of homoscedasticity (i.e., same variance for any combination of covariates), and independence of observations (e.g., multiple hospitalizations for a same patient). It has been suggested [53] that transforming the utilization data in a log scale can be a helpful resource, thus reducing heteroscedasticity, decreasing the influence of outliers, and reducing the distribution's right tail. To correct for those assumptions, these health care utilization data were transformed to a log scale, thus meeting the normality assumption and allowing for regression analyses to be conducted. Aside from health care utilization, no other variables were transformed for this study. All Pearson correlation coefficients were smaller than .5, with the exception of the two behaviorally specific self-efficacy measures, self-efficacy to communicate with the physician (SEMD) and self-efficacy to manage a disease (SEDS) ($r(182) = .654, P < .001$). To prevent multicollinearity issues, only SEMD was used in the regression analyses. The SEMD score was selected as the behaviorally specific self-efficacy indicator, because it had high internal consistency (Cronbach $\alpha = 0.913$), and because it measures a construct more closely related to

one's self-efficacy to use the health care system (i.e., communicating with the physician), other than individual aspects related to health care (i.e., ability to manage a disease).

Regression analyses

In the final step of the regression which included all participants ($n = 183$), the entire group of variables significantly predicted health care utilization ($F(11, 172) = 3.631, P < .001$, adjusted $R^2 = .137$), accounting for 18.8% of variance in health care utilization, as indicated by the R^2 (.188). The only variables that significantly contributed to the prediction of health care utilization were gender ($t(181) = 2.972, P = .003$), general self-efficacy, ($t(181) = -2.512, P = .013$), and self-efficacy to communicate with the physician, ($t(181) = 2.965, P = .003$). Of note, race was not a significant predictor of health care utilization. Regression analyses and beta coefficients can be found in Table 2.

Table 2. Regression analysis predicting health care utilization.

<i>Variable</i>	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>R²</i>	<i>ΔR²</i>
Step 5				.188	.026
Constant	1.517	.734			
Age	-.032	.018	-.121		
Gender	.361†	.12	.214		
Social class	.025	.032	.06		
Sexual orientation (Heterosexual/ Other)	.079	.157	.036		
Ethnicity (People of color/White)	-.112	.121	-.071		
Discrimination	.074	.084	.07		
Outcome expectations	.12	.134	.074		
NGSE	-.193*	.087	-.166		

SEMD	.085†	.028	.24
HCSDS	.176	.102	.132
Skepticism	-.134	.076	-.132

Notes: N = 183; * p < .05; †p < .01

Mediation analyses

A single mediator model was tested, to investigate the indirect effects of self-efficacy to communicate with a physician on the association between experiences of discrimination and health care utilization in this college student sample. The mediator model for the total sample (Figure 1) was significant, and explained 4.5% of the variance in health care utilization ($R^2 = .045$, $F(2, 181) = 4.2675$, $P = .0155$). R^2 was used as a measure of accounted variance in the mediation model [54]. The bootstrap test results indicate that the indirect effects of discrimination on health care utilization through the mediator self-efficacy to communicate with the physician were significant, as indicated by the confidence interval that did not include 0, 95% CI [-.0907, -.0025]. This suggests mediation by self-efficacy to communicate with the physician between discrimination and health care utilization in the total sample, although it accounted for only 4.5% of the variance in health care utilization.

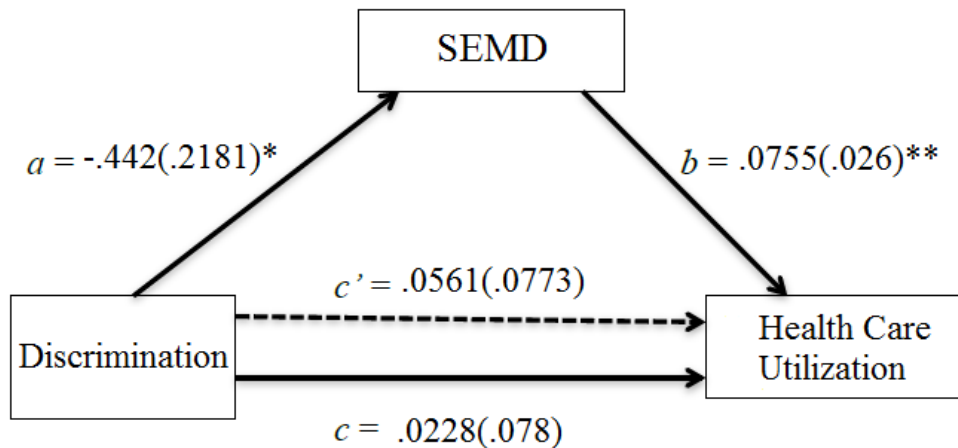


Figure 1. This figure shows the beta coefficients for the mediation relationship between discrimination, self-efficacy to communicate with the physician, and health care utilization for the total sample.

Notes: $n = 183$. $P < .05^*$, $P < .01^{**}$.

DISCUSSION

In the present study, we examined different ways experiences of discrimination may affect health care utilization of college students. Experiences of discrimination were not a significant predictor of health care utilization in the regression analysis, thus not providing support for the first hypothesis (H1). Hence, experiences of discrimination do not seem to directly influence how much a person actually uses the health care system in this sample of college students. It appears that the relationship between discrimination and health care utilization is not a simple one. Although a direct connection between experiences of discrimination and health care utilization was not found in this sample, its effect might be indirect, through other psychosocial factors, such as self-efficacy.

Both general self-efficacy and health care-related self-efficacy (i.e., self-efficacy to communicate with physicians) significantly improved the prediction of health care utilization for this sample.

For this sample of participants, their general confidence and their confidence to communicate with the physician seem to be a large contributor to actual usage of the health care system. This relationship is consistent with previous findings [36] that self-efficacy was a significant predictor of self-care behaviors and health care utilization. This relationship between self-efficacy and health care utilization indicates that perceiving that you are able to go to the doctor and communicate with the physician, as well as having an overall perception that you can manage tasks at hand, can enhance your use of the health care system.

Self-efficacy has been found to predict health behaviors and health care utilization [36], and it is directly influenced by previous experiences, such as experiences of discrimination [34]. Significant differences in treatment utilization have been found between White students and ethnic and racial minorities, even after accounting for SES, insurance coverage, and geographic access [16], suggesting that mediators of health care disparities (i.e., cultural mismatch of providers and patients, discrimination) should be considered as possible factors. In this study, experiences of discrimination were assessed at an individual level (i.e., perceived experiences of discrimination). However, racism is a complex system, in which values and ideologies held by privileged groups serve to marginalize nondominant groups. These experiences of racism are also complex, as it includes being stereotyped and discriminated against (i.e., individual racism), as well as societal resources that create and maintain the disenfranchisement of people of color (i.e., institutional racism). These different levels of exposure highlight how pervasive and harmful racism can be to the experiences of people of color [55]. Further, race was not a significant predictor of health care utilization, indicating that race by itself was not useful as an explanatory variable for health behaviors [32]. Gender was also a significant predictor of health care utilization in this study, congruent with previous findings that college aged women tend to use more health care services [56].

The indirect effect analysis was conducted with the total sample, partially mediating the relationship between discrimination and health care utilization. Although the effect size was small, this significant indirect effect illustrates the importance of experiences of discrimination in the development of self-efficacy to communicate with the physician. This suggests that discrimination indirectly affects health care utilization through self-efficacy to communicate with the physician. This finding further advances the literature, which previously had identified direct connections between experiences of discrimination and health care utilization [10, 14, 57, 60]. The significant mediation effect illustrates that more experiences of discrimination leads to lower levels of confidence (i.e. self-efficacy) to communicate with medical providers. It appears that college students internalize these experiences of discrimination, affecting one's self-efficacy to communicate with physicians, thus leading to lower health care utilization. Although previous research provides examples of this direct connection, discrimination's effects can be perceived in several different aspects of a person's life, and it not only has direct effects, but also indirect effects on health care utilization. In a meta-analytic review of the association between experiences of racism and health services use, Ben and colleagues [60] found that participants who endorsed experiencing racism had lower satisfaction and lower perceived quality of care, as well as worse communication with providers. Further, the authors found that although experiences of racism were associated with delayed health care, it was not directly associated with lower health care utilization overall. Their findings further corroborate with the significant indirect effect racism may have on health care utilization, by corroding the communication between patient and provider.

These findings contribute to the body of evidence that demonstrates that societal factors and oppressive systems, such as racism, influence health behaviors and the use of medical care services. Andersen's model [23] includes race and ethnicity as predisposing variables, which are

negative predictors of health care utilization. However, given the large heterogeneity within ethnic groups, racial and ethnic identity by themselves cannot predict behaviors in a meaningful way [32, 58]. Race and ethnicity should not be used merely as predictor or explanatory variables, but researchers should attempt to explain the ethnic and racial differences by assessing possible reasons for them, such as the psychological meanings of ethnicity, experiences of discrimination, and oppression [58]. These findings demonstrate how psychosocial factors such as discrimination and self-efficacy regarding interactions may explain racial and ethnic differences, opposed to race as a categorical variable.

The finding that self-efficacy to communicate with physicians mediates the relationship between discrimination and health care utilization allows for different types of interventions to be created. Interventions may focus on improving people's self-efficacy to communicate with medical providers. Patients of color might also benefit, with regard to self-efficacy to communicate with providers, perhaps by having more diverse, representative providers, making them more approachable. Interventions may also focus on promoting consistent actions to facilitate social change, improving providers' cultural competencies. Interactions with culturally competent providers might provide evidence that would facilitate self-efficacy to communicate with providers in the future. Lastly, although health care utilization means were not significantly different between students of color and White students, these findings indicate that the factors influencing actual health care system usage were different. Overall, the main implication of our findings is highlighting the need for colleges and universities to support their students and promote well-being, particularly those with marginalized identities, to increase their confidence to use health services and better communicate with health care providers.

Study limitations

Some limitations regarding generalizability must be noted. The sample consisted only of students from a midsized American university, and it might not be generalizable to other places that have different demographics. In addition to being a college sample, the participants were young, which might have skewed the results and prevent its generalization to community dwelling adults, for example. Furthermore, data were collected at a predominantly White university, which may increase the minority status stressors experienced by these students of color [59]. The sample was also primarily heterosexual (83.8%), and the findings might also not be applicable to people with other sexual orientations and gender identities. Additionally, although experiences of racial discrimination were measured, other types of discrimination (i.e., sexual orientation, size, social class) were not assessed, although they might influence health care utilization as well.

Further, multiple comparisons between variables may have inflated the error rate, which may hinder the interpretation. Self-efficacy was a significant predictor in this study. However, it is not the only phenomenon that predicts health care utilization. Further research is required to identify other psychosocial factors that might influence health care utilization. Outcome expectations, for example, were not a significant predictor in any of the analyses, but it might have a unique contribution to the variance of health care utilization. There was no evidence of the measure's internal and external validity, which hinders its usefulness. Moreover, although significant the effect size of the indirect effect was small, which may limit their interpretation.

Lastly, discrimination is perceived differently by people from different racial and ethnic groups and can affect people differently. Including all people of color in a single analysis loses the variability of experiences, and these scores may underestimate the intra-group variance of how discrimination is perceived and experienced. Future research should be conducted with larger n sizes, to better understand how discrimination may affect each group differently.

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