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DISCRIMINATION, ACCULTURATIVE STRESS, AND ACADEMIC ACHIEVEMENT

Rebecca A. Steele

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ACADEMIC ACHIEVEMENT

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by

Rebecca A. Steele

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Rebecca A. Steele   Elizabeth Brondolo, Ph.D.

ABSTRACT

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Researchers report an association of racial discrimination to academic achievement for racial/ethnic minority students. Racial discrimination is manifest on multiple levels, including interpersonal discrimination, discrimination in schools, and societal and cultural discrimination. Researchers have generally focused their efforts on examining the effects of one type of discrimination on academic achievement. Further, mediators of this relation have not been fully explored. In a sample of 78 college students, only interpersonal racial/ethnic discrimination, and not school-based or societal discrimination, was negatively associated with GPA. However, the effects did not hold once controlling for demographic factors. Two potential mediators of the relations of interpersonal discrimination to GPA were examined: acculturative stress and academic self-efficacy. Interpersonal discrimination was positively associated with acculturative stress but not related to academic self-efficacy. Societal discrimination was associated with academic self-efficacy. However, neither acculturative stress nor academic self-efficacy mediated the relations of discrimination to GPA.

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Review of Literature

The United States is a nation that prides itself on both academic and occupational success. This nation values economic success and upward economic mobility that places the United States at the forefront of the world's socioeconomic rankings. However, racial disparities exist that hinder the nation's forward progress. According to Libassi (2018), the United States' socioeconomic system would look much different if racial disparities did not exist. Libassi states that more than one million racial minorities would have obtained a degree just between the years of 2013 and 2015 if Black and Hispanic individuals earned collegiate degrees at a similar pace as did their White counterparts. Shapiro and colleagues (2017) also found that Black and Hispanic students had the lowest college completion rate, lower than their racial majority peers.

The issue of racial disparities in education are present even earlier than college. Researchers found that high school dropout rates were the highest for Black and Hispanic students in comparison to their White peers in 2006 (U.S. Department of Education National Center for Education Statistics, 2019). However, these researchers also found that the dropout rates for ethnic minorities decreased in 2017 from 21 to 8.2 percent, 15.1 to 10.1 percent, and 11.5 to 6.5 percent for Hispanic, American Indian/Alaska Native, and Black students, respectively. During this time, political changes had taken place since 2006 that may have influenced ethnic minority students' academic retention rate. One of the changes during this 11-year span of time includes the election of Barak Obama, a biracial African American and Caucasian, as the President of the United States, who served for two terms (The White House, n.d.). Sonia Sotomayor, a Puerto Rican female, was also commissioned as the first Hispanic Supreme Court Justice in 2009 (Oyez, n.d.).

Further, Congress passed two resolutions in 2008 and 2009 proclaiming the day after Thanksgiving as "Native American Heritage Day" (The United States Department of Justice, 2021). The presidential administration also passed the Tribal Law and Order Act of 2010, which allowed tribal courts to have more autonomy over criminal cases (Bush, 2008). These groundbreaking events may have shifted to social climate in ways that changed ethnic minority students' perceptions of their place in society and their commitment to progress academically. The appearance of barriers of societal discrimination slowly being drawn back may have influenced racial and ethnic minority students' perceptions of themselves, their place in society, and their commitment to progress academically. These data suggest that there are likely factors that contribute to ethnic minority student success that are not solely academic in nature.

By observing the factors that influence academic outcomes through a racial/ethnic lens, this study attempts to elucidate the various factors that contribute to ethnic minority students' academic success. This research also analyzes the effect of racial/ethnic discrimination on academic achievement and the role that acculturative stress and academic self-efficacy play in that relationship.

Rationale

There are clear racial disparities among racial/ethnic minority students and their White counterparts in academic achievement. Researchers have found an association between racial discrimination and academic achievement for racial/ethnic minority students; however, the variables that mediate this relationship are not adequately addressed in the research. Acculturative stress, otherwise identified as race-related stress, may play a role in the relationship between discrimination and academic achievement, as

stress has consistently been shown to have a relationship with academic achievement (Buddington, 2002; Cohen et al., 2006; Pritchard & Wilson, 2003; Stewart et al., 1999). In related research, many studies identify academic self-efficacy as a significant predictor of academic achievement (Chemers et al., 2001; Gore Jr, 2006; Talsma et al., 2018; Turner et al., 2009; Zajacova et al., 2005; Zimmerman et al., 1992; Zimmerman, 2000). However, this research has not yet determined if racial discrimination undermines academic self-efficacy or explains racial disparities in achievement.

Discrimination

Racial/ethnic discrimination is defined as the unfair treatment of an individual or group due to their race or their cultural characteristics (Contrada et al., 2001; Krieger, 2000). Racial/ethnic discrimination can manifest at multiple levels, including interpersonal prejudice and maltreatment, institutional policies and processes that disadvantage members of racial/ethnic minority groups, and cultural communications that promote prejudice and discrimination and undermine expectations of equitable treatment (Brondolo et al., 2011). Discrimination at any level may undermine academic outcomes (Benner et al., 2018). This research focuses on the effects of discrimination at the interpersonal, classroom, and societal levels on objective grade point average (GPA), a salient measure of academic achievement (Kuncel et al., 2005).

On an individual or interpersonal level, discrimination can include acts of maltreatment that range from unintentional and/or subtle microaggressions to direct, blatant, and intentional maltreatment (Sue et al., 2007; Williams, 2018). Individual experiences of race-related maltreatment may undermine achievement through multiple pathways, including increased stress, loss of motivation, decreases in self-efficacy or

expectations of benefit, among other pathways (Hood et al., 2017). A recent meta-analysis examined the relations between retrospective survey measures of discrimination and multiple indices of achievement, including GPA (Benner et al., 2018). This meta-analysis focused largely on the effects of individual-level directly perceived interpersonal discrimination and included a total of 47 studies. They found that higher levels of discrimination were negatively associated with GPA. The overall effect size was small but significant ($r = -.11$). The authors reported a greater effect of discrimination on academic achievement for Latino males compared to Black males or Latina females. No gender differences in the relation of discrimination to GPA were found. More recent studies have confirmed these effects (Datu, 2018).

On an institutional level, prejudice and discrimination can be expressed through race-based maltreatment from teachers or peers (McNeil Smith & Fincham, 2015), differential classroom management practices, differential enforcement of school discipline policies, or differential access to high-quality schools among other manifestations (Chen et al., 2021). Teacher actions and school policies may themselves increase stress, block opportunities, and reduce perceptions of efficacy or access (Winkle-Wagner, 2010).

Research suggests that school-based discrimination has negative effects on academic achievement. Specifically, studies that have employed survey methodology suggest that students' perceptions of discrimination from their teachers is negatively and significantly associated with self-reported GPA for Black youth (Assari & Caldwell, 2018; Banerjee et al., 2018; Thomas et al., 2009). Analyses revealed no gender differences in experiences of teacher discrimination, but the effects of perceived teacher

discrimination on GPA was worse for females than for males (Assari & Caldwell, 2018).

Differential school punishment, in which Black students receive harsher punishment,

including suspensions and expulsions, has been linked to lower levels of academic

motivation (Chen et al., 2021). Research suggests that harsh punishment in schools,

including corporal punishment, is associated with lower GPA across racial groups

(Gershoff et al., 2019).

On a societal or cultural level, prejudice and discrimination can be communicated

via all forms of media and the value placed on the cultural symbols and practices of

members of different racial and ethnic minority groups (Sue et al., 2007). Pervasive

biased communications may lead individuals to perceive societal discrimination,

reflecting the belief that individuals from some ethnic or racial groups will not be treated

fairly or protected (Caldwell & Obasi, 2010).

The empirical literature examining the association of cultural or societal

discrimination to GPA is limited. However, related concepts, such as cultural mistrust

have been shown to be negatively associated with self-reported GPA (Caldwell & Obasi,

2010). Reports of parental racial socialization practices can also be considered linked to

perceptions of societal discrimination. A recent meta-analysis finds that socialization

practices associated with the promotion of mistrust were unrelated to GPA, whereas

preparation for bias was weakly positively associated with GPA (Wang et al., 2020).

Discrimination at any one of these levels may promote or exacerbate

discrimination at other levels. To date, it remains unclear if individual, school, and

societal discrimination each affect academic achievement or if there are unique effects

attributable to one level of discrimination. Therefore, the primary aim of the present

study is to examine the unique effects of individual level, school, and societal discrimination on objective measures of GPA.

Objective GPA, as recorded on college students' advisement reports, avoids some of the common method variance associated with self-report assessments of discrimination and academic motivation. In analyzing the accuracy of self-reported grades versus objective measures of grades, researchers found that students reported their grades in varying patterns, leaving self-reported measures of grades an unreliable source (Somers et al., 2020).

Mediators of the Effects of Discrimination on GPA

The pathways that mediate potential associations of discrimination at any level to academic achievement are not fully understood. Two pathways that have been identified as potential explanatory or mediating variables include academic self-efficacy and stress. These two pathways may act independently or jointly to influence GPA.

Academic self-efficacy is defined as the appraisal of one's capability to plan and act in a manner that promotes attainment of positive academic performance (Zimmerman, 1995). Although some prior research has established a relationship between academic self-efficacy and academic achievement (Multon et al., 1991), the directionality of this relationship is unclear. A meta-analysis of longitudinal research identified a bidirectional relationship in which academic performance impacts self-efficacy and vice versa (Talsma et al., 2018). Emerging adult college students may experience changes in their academic self-efficacy, as they re-evaluate their own competence in a new academic environment.

Data on discrimination and academic self-efficacy has largely suggested that discrimination is associated with poorer academic motivation, including academic self-efficacy (Benner et al., 2018). However, not all studies report these effects (Banerjee et al., 2018).

Discrimination may also affect academic achievement through effects on stress. Increased self-reported stress is consistently associated with poorer academic achievement (Buddington, 2002; Cohen et al., 2006; Pritchard & Wilson, 2003; Stewart et al., 1999). Discrimination is a psychosocial stressor and may trigger other forms of stress, including acculturative stress. Acculturative stress is defined by Sam and Berry (2010) as "the process of cultural and psychological change that results following meetings between cultures." Discrimination may negatively impact an individual's sense of belonging to their environment and the dominant culture, leading to heightened levels of stress as individuals grapple with decisions about accepting or participating in both mainstream culture and their own racial/ethnic group culture.

Researchers have consistently found a strong relationship between discrimination and acculturative stress in both adolescents and adults (Ahmed et al., 2011; Dawson & Panchanadeswaran, 2010; Mallett, et al., 2021; Torres et al., 2012). Acculturative stress acts as a significant mediator between perceived racial discrimination and symptoms of depression (Ponciano et al., 2020; Cabrera Tineo et al., 2020; Tineo et al., 2021). However, it remains unclear if acculturative stress mediates the relationship of discrimination to academic achievement.

Although acculturative stress and academic self-efficacy have been identified as potential predictors of academic achievement, few studies have examined these variables

together as possible explanations for the relations of interpersonal, institutional, or societal discrimination to reduced academic achievement. In this study, I test hypotheses about the relations of self-reported discrimination at the individual, academic, and societal levels to objective GPA among college students. Further, I test hypotheses about the potential mediating roles of self-reported acculturative stress and academic self-efficacy. Identifying mediators of the relations of discrimination to academic achievement may help identify targets for intervention.

Hypotheses

Given what is known about the factors that may influence academic achievement, it was predicted that students with higher reports of discrimination would report higher levels of acculturative stress and lower academic achievement. This prediction was based on the hypothesis that higher reports of discrimination would lead to higher levels of acculturative stress and, subsequently, lower academic achievement. Further, it was hypothesized that academic self-efficacy would act as a subsequent mediator in the relationship between racial discrimination and academic achievement.

Method

Participants

I intended to recruit participants in person on the Queens campus of St. John's University. However, campus closures due to a global health crisis hindered this approach. As a result, participants were recruited via email through faculty at St. John's University, who forwarded the recruitment email to students in their respective courses. A total of 141 participants completed the questionnaires for the study. Of the 141 participants, 59 students either did not provide a key (i.e., predictor or outcome) variable or did not yet have a history of academic achievement in college (i.e., a GPA of 0). As a result, 82 participants remained. Students who did versus did not upload GPA did not differ on any key variable, including academic self-efficacy, acculturative stress, societal discrimination, classroom discrimination, and interpersonal discrimination. There were

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also no differences on key variables between participants who did and did not yet accrue an academic grade history.

Of the 82 remaining participants, 4 consented to being above 18 years of age but later revealed that they were younger than 18 at the time of the survey. Since parental consent was not obtained, these 4 participants' data were removed from the sample, leaving 78 participants remaining for the analytic sample.

The analytic sample included 78 undergraduate college students with a mean age of 19.88 (SD = 1.4). Participants were predominantly women (80.77%, $N = 63$) and either juniors (35.90%, $N = 28$) or seniors (34.62%, $N = 27$). The sample was racially diverse, with predominant races represented being Asian (25.97%, $N = 20$) and White (35.06%, $N = 27$). Additional participant details are displayed in Table 1 below.

Table 1

Characteristics of the Sample

VARIABLE	N	%
TOTAL	78	100
GENDER AND AGE		
Men	14	17.95
Women	63	80.77
Other	1	1.28
Age	Mean = 19.88	SD = 1.4
RACE		
Asian	20	25.97
Black	13	16.88
Latinx	10	12.99
Multiracial	7	9.09
White	27	35.06
EDUCATION		
Freshman	3	3.85
Sophomore	20	25.64
Junior	28	35.90
Senior	27	34.62

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Materials

Materials for this study included a survey consisting of questions regarding demographic information and four empirically tested self-report scales, an online survey builder, and a data analyzation tool. Participants were asked to report their age, gender, and current education year, which included 1st-year through 4th-year undergraduate student. Though 5th year undergraduate student was also an option, there were no students who met that criteria in the sample.

Identification with American Ideals.

The Identification with American Ideals scale (IAI; Phinney et al., 1994) was used to measure perceived societal discrimination. The IAI contains 12 items that inquire about the extent to which the participant believes the proposed American ideals personally apply. Although Phinney and colleagues (1994) intended to measure self-identification with the presented American ideals on the IAI, the content of the questions also address the commensuration (or discrepancy) between America's virtues and its true practices – allowing this scale to be used in this current study as a measure of perceived societal discrimination. The scale begins with the question "To what extent do the following phrases accurately describe what "America" or "being American" means for you personally?" and follows with statements such as "a society that is concerned about the welfare of my cultural group" and "a society that supports freedom and justice for me." Possible responses follow a four-point Likert scale format and range from 1 (strongly disagree) to 4 (strongly agree). Phinney and colleagues (1994) reported a Cronbach alpha of .85 for high school and college students and .86 for the college student population (Phinney & Onwughalu, 1996).

Brief Perceived Ethnic Discrimination Questionnaire – Community Version.

The Brief Perceived Ethnic Discrimination Questionnaire – Community Version (PEDQ-CV; Brondolo et al., 2005) was used to assess experiences of interpersonal discrimination. The Brief PEDQ-CV is a shortened 17-item version of the 34-item PEDQ-CV 'Lifetime Exposure Discrimination' subscale, which was derived from the full 70-item Perceived Ethnic Discrimination Questionnaire (PEDQ; Contrada et al., 2001). This brief version was developed to evaluate the frequency of perceived discrimination reported by adults in the general population. This scale begins with the prompt "Because of my ethnicity…" and presents various situations involving interpersonal mistreatment such as "…a waiter or clerk ignored me" and asks participants to identify if and/or how often the event has occurred in their lifetime. Available responses to items lie on a five-point Likert scale and range from 1 indicating "never happened" to 5 indicating "happened very often." Brondolo and colleagues (2005) reported the Brief PEDQ-CV to have good internal consistency and convergent and construct validity. Through factor analyses, four interrelated subscales emerged with correlations ranging from .45 to .64. These subscales include Exclusion/Rejection, Stigmatization/Discrimination, Threat/Aggression, and Discrimination at Work/School, which were identified as not being statistically redundant.

Patterns of Adaptive Learning.

To elaborate on the experiences of discrimination measured by the Brief PEDQ-CV, five items that pose as a measure of classroom-based discrimination on an original version of the Patterns of Adaptive Learning Scales (PALS; Midgley et al., 1996), were included: specifically, the School Relationship Dimension subscale and one item from the

Relatedness subscale. These questions assess students' perception of their academic relationships and general sense of belonging phrased in the absence of discrimination, contrasting the question phrasing of items on the Brief PEDQ-CV. Items on this scale include questions such as "in this school, teachers treat students of my race/ethnicity with respect" and "I feel like students of my ethnicity/race belong in this school." The scale provides 3 answer choices ranging from "not at all true" to "somewhat true" to "very true." Cronbach's alpha for the academic relationship subscale and the sense of belonging subscale have been reported as .81 and .76, respectively (Roeser et al., 1996).

Social, Attitudinal, Familial, and Environmental Acculturative Stress Scale.

The Social, Attitudinal, Familial, and Environmental Acculturative Stress Scale (SAFE; Mena et al., 1987) was used to measure acculturative stress. This scale is a shortened version of the original 66-item SAFE stress scale developed by Padilla and colleagues (1986). Despite the omission of a few items, the shortened SAFE stress scale has remained at the forefront for measuring acculturative stress in various studies (Joiner Jr & Walker, 2002; Perez et al., 2002; Castillo et al., 2012; Castillo et al., 2007), and is reported to have a .89 Cronbach Alpha coefficient (Mena et al., 1987). The SAFE Scale is a 24-item inventory designed to evaluate and interpret any distress associated with acculturation. This modified version also incorporates 7 additional items to account for perceived discrimination. The SAFE scale follows a six-point Likert scale format including 0 indicating "have not experienced" and ranging from 1 indicating "not at all stressful" to 5 indicating "extremely stressful". Scoring for the SAFE stress scale requires a simple summing of all selected answers with a possible score between 0 and 120. Participants are grouped into either high or low score categories by employing the

median of scores as the cutoff point (Mena et al., 1987). Despite its Latino immigrant-specific origins, the construct validity has been tested and found to show similar effects in different American-born ethnic groups (Joiner Jr & Walker, 2002).

Patterns of Adaptive Learning: Academic Self-Efficacy Subscale.

The Academic Self-Efficacy subscale of the revised version of the PALS (Midgley et al., 2000) was used to measure academic self-efficacy. Midgley and colleagues (2000) confer that although the original PALS is still useful and valid, this revised version allows constructs related to academic goals to be addressed more directly. The academic self-efficacy dimension of the PALS assesses students' perception of their ability to plan and execute the necessary actions to achieve academic success. This subscale includes items such as "I'm certain I can master the skills taught in class this year" and "even if the work is hard, I can learn it." Possible answer choices follow a five-point Likert-scale format and range from 1 indicating "not at all true" to 5 indicating "very true." Midgley and colleagues reported a Cronbach's alpha of .78 for this dimension of the scale.

Academic Achievement.

Objective GPA, as recorded on college students' academic records, was used as a measure of academic achievement. Participants completed all measures in this survey and were asked to upload a copy of their advisement report or unofficial transcript to provide information about their GPA. These academic records did not contain any identifiable information.

Data Collection and Analysis

Use of the research software data collection tool by Qualtrics was employed in the form of an online survey. Qualtrics allows researchers to build and modify surveys to their preference and specificity. The software also tracks and collects all survey responses, ensures secure confidentiality, and allows for the ease of exporting data into other programs including the data analyzation software to be used in this study. Lastly, to analyze the data, statistical analyses were operated via the SAS statistical programming software (Release 3.8, Basic Edition).

Design

This study followed a cross-sectional observational design and collected participant responses via an online survey. The original plan was to recruit participants for repeated measures consisting of three data collection time points: once at the beginning of the semester (September 2020), once at the end of the semester, (i.e., December 2020 to January 2021), and a follow-up during the following semester (April to May 2021). The timing of these observations would allow for assessment of differences in students' survey responses, specifically academic self-efficacy, based on whether they completed the survey before or after receiving feedback on their academic achievement in the form of final grades. This would also allow for analyses of whether or not experiences of discrimination and feedback on academic performance had lasting impacts on students' perceptions of their academic self-efficacy, and subsequently, on their objective performance. Unfortunately, retention rates were low, leaving the sample of consistent participants too low for mediation analyses (N = 2). As a result, I ran all

analyses on the first data collection time point, which had a more sizeable sample (N =

78).

Procedure

The online survey was sent to St. John's University professors who decided

whether to forward the information to their students. The survey was then completed in

the participants' environment of choice, remote from the researchers.

Participants completed a consent form informing them of the purpose of the

study, of incentives for completion, and that participation is voluntary. If participants did

not consent to participation, they were forwarded to the end of the survey. Consenting

participants began the survey on the following screen. Surveys were presented in the

following order: the IAI (Phinney et al., 1994), which assessed for perceptions of societal

discrimination, the SAFE scale (Mena et al., 1987), which assessed for acculturative

stress, the Brief PEDQ-CV (Brondolo et al., 2005), which assessed for perceptions of

interpersonal discrimination, two items from the original PALS (Midgley et al., 1996),

which assessed for perceptions of classroom-based discrimination, and the Academic

Self-Efficacy subscale of the PALS, which assessed for perceived academic self-efficacy

(Midgley et al., 2000). Finally, participants were asked questions regarding academic

performance and instructed to upload their advisement reports for detailed information

about their academic achievement. The survey followed this sequence of measures

regardless of participants' performance on the previous measure. Incentives for

completion of the survey included a $5 Amazon gift card.

Participants were emailed five times to remind them to upload materials if they had not done so or if they had not withdrawn their consent to be contacted. These participants were also sent personalized links directing them to their individual survey to streamline this process and reduce the effort required to upload their materials. Survey completion required about 10-15 minutes. Data was then transferred into SAS for statistical analysis.

Analytic Plan

First, Little's (1988) missing completely at random (MCAR) analyses were run to test for patterns of missing data. Zero-order relations among key variables (i.e., interpersonal discrimination, societal discrimination, classroom discrimination, acculturative stress, academic self-efficacy, and academic achievement) were examined. In an analysis of correlations between all types of discrimination and outcomes, only interpersonal discrimination, and not classroom or societal discrimination, revealed significant associations with at least one mediating (i.e., acculturative stress, academic self-efficacy) and outcome (i.e., GPA) variable. Therefore, classroom and societal discrimination were eliminated from further analyses. Next, sociodemographic differences in key variables were examined to determine which should be included as covariates. Categorical variables, such as gender, year in school, and race, were examined using ANOVA with follow-up post-hoc tests, which were not additionally adjusted for multiple comparisons, as I intended to use a less conservative approach to evaluating p-values to determine if any of the sociodemographic variables should be considered as a covariate. Age and GPA effects were evaluated using correlational analyses.

Based on demographic analyses, race, age, and year in school emerged as the only three variables with significant associations with predictor variables (i.e., interpersonal discrimination and acculturative stress) and the outcome (GPA). Therefore, only race and year in school were included as covariates for analyses. Dummy coded race variables for racial minority participants consisted of Asian versus all others, Black versus all others, Latino versus all others, and multiracial versus all others. Hierarchical stepwise regression analyses were conducted to evaluate the relationships among predictors (interpersonal discrimination), mediators (acculturative stress and academic self-efficacy), and outcomes (GPA). Then, multiple mediation analyses using bootstrapping techniques were run to test relations among all key variables.

Results

Preliminary Analyses

To evaluate covariates, I examined sociodemographic and education level differences in key variables. There were no significant gender effects on any measure of discrimination, or on GPA, acculturative stress and academic self-efficacy. Age was significantly positively correlated with interpersonal discrimination ($r = .31$, $p < .01$) and significantly negatively correlated with GPA ($r = -.56$, $p < .001$). There were no significant age differences in any other measures. Comparisons of race/ethnicity differences in key variables focused on effects for the three largest groups (i.e., Asian, Black, and White). Asian and Black individuals consistently reported experiencing more individual, classroom, and societal discrimination than White individuals. Racial differences in GPA were not significant. Additional demographic differences on key variables can be found in Table 2.

There were significant year in school effects for measures of classroom discrimination ($F(3,75) = 3.67$, $p = .02$). Seniors ($M = 1.74$) reported experiencing significantly more classroom discrimination than sophomores ($M = 1.36$, $p = .005$) and juniors ($M = 1.44$, $p = .01$). Consequently, age and race were included as covariates in subsequent analyses. Year in school was not included as it was closely associated with age ($r (78) = .72$, $p < .001$).

Initial Hypothesis Testing

Preliminary analyses on a subset of participants were conducted to test the hypothesis that strong associations would be found between discrimination and academic achievement. The hypothesis that acculturative stress and academic self-efficacy act as

mediators in the relationship between racial discrimination and academic achievement was also tested.

I hoped to conduct research which would allow for examination of these relationships in a longitudinal framework; however, despite repeated attempts, I was unable to recruit a sufficient sample of participants willing to complete the study for all three time points (N = 2). As a result, a subsample of the first 55 participants were included in the preliminary hypothesis testing. Using self-report measures and objective reports of academic outcomes, I measured perceived interpersonal discrimination, perceived societal discrimination, perceived classroom discrimination, acculturative stress, academic self-efficacy, and academic achievement.

Analyses of the data employed both multiple regression and multiple mediation bootstrapping where both acculturative stress and academic self-efficacy were included as mediators in the relationship between perceived interpersonal discrimination and academic achievement. Results indicated that perceived interpersonal discrimination was negatively associated with academic achievement and positively associated with acculturative stress, while controlling for covariates (i.e., race). I also found acculturative stress, but not academic self-efficacy, to act as a mediator in the relationship between interpersonal discrimination and academic achievement.

Some of the findings from the preliminary hypothesis testing, such as associations between interpersonal discrimination and academic achievement, approached (i.e., $p \leq$ .07) but did not reach traditional parameters of statistical significance (i.e., $p \leq .05$), which may have been a function of a small sample size. Power analyses indicated that a sample size of 72 is required to test these effects, and the initial hypothesis testing

included a sample size of 55. As a result, I analyzed these associations in the larger

sample (N = 78). I anticipated the findings of the preliminary hypothesis testing (i.e.,

acculturative stress acting as a mediator in the relation of interpersonal discrimination to

academic achievement) would continue to be supported. It was also hypothesized that the

findings of this study would suggest that interpersonal discrimination leads to

acculturative stress, which subsequently leads to poor academic outcomes.

Intercorrelations Among Key Measures

Additional analyses were run in the larger sample (N = 78). As shown in Table 3,

the total interpersonal discrimination score and scores on the subscales of threat, social

exclusion and stigmatization were significantly positively related to classroom

discrimination but were not significantly related to societal discrimination. Classroom

and societal discrimination were significantly positively correlated.

In unadjusted analyses, lifetime total interpersonal discrimination was

significantly negatively associated with GPA. None of the associations of the subscales to

GPA reached significance, although the associations of the stigmatization (p = .051) and

threat (p = .050) subscales to GPA approached significance. Neither classroom

discrimination nor societal discrimination were significantly associated with GPA.

Lifetime discrimination and all subscales were significantly related to

acculturative stress. Neither classroom discrimination nor societal discrimination were

associated with acculturative stress. Only the stigmatization subscale and the societal

discrimination measures were significantly related to academic self-efficacy.

Acculturative stress was significantly negatively associated with academic self-efficacy. Acculturative stress was not associated with GPA. Academic self-efficacy was significantly positively associated with GPA.

Regression Analyses and Tests of Mediation

Hierarchical multiple regression analyses revealed that the effects of lifetime discrimination on GPA were no longer significant with the covariates of age and race (dummy-coded) in the equation (B = -0.07, SE = 0.12, t = -0.60, p = 0.549, b = -0.06). When the four subscales were entered as a group into an equation predicting GPA, the group as a whole was not significant. As none of the other measures of discrimination were significantly associated with GPA, no further analyses were performed.

As shown in Figure 1, tests of mediation controlling for age and race revealed significant *a* paths, linking lifetime total discrimination to acculturative stress, and significant *b* paths linking academic self-efficacy to GPA. However, neither the total nor direct paths from lifetime discrimination to GPA were significant, nor were the indirect effects of acculturative stress or academic self-efficacy.

To determine the effects of outliers, I examined Cook's D for all participants in each of the covariate-corrected A-C, A-B(^{1} and ^{2}), B^1- B^2, and B(^{1} and ^{2})-C analyses. Using the cutoff of .10, 2 outliers were eliminated from analyses. After repeating the regression analyses for all of the pathways (i.e., A-C, A-B^1, A-B^2, B^1- B^2, B^1-C, B^2-C) excluding the outliers, the significance of analyses was not affected for most pathways (i.e., A-B^1, B^1-B^2, B^1-C, B^2-C). There were changes in the significance of the A-C and A-B^2 pathways. On the A-C pathway, the significance effects of the unadjusted model dissipated when outliers were excluded (b = -.196, p = .13). After adjusting for

covariates, the pathway models remained insignificant with the exclusion of outliers. For

the A-B^2 pathway, the covariate-adjusted model did not reach significance with the

inclusion of outliers (b = -.635, p = .12). However, when excluding outliers, and

controlling for covariates, interpersonal discrimination was a significant predictor of

academic self-efficacy (b = -.789, p = .05). The findings in the larger sample (N = 78) did

not fully confirm the findings of the initial hypothesis testing in the smaller sample (N =

55).

Table 2

Means and Standard Deviations of Key Variables for Full Group and by Demographic Categories

VARIABLE	Full Group		Race (Subdivided Into Top Categories)						Year in School (Subdivided into Top Categories)					
	N = 78		Asian (N = 20)		Black (N = 13)		White (N = 27)		Sophomore (N = 20)		Junior (N = 28)		Senior (N = 27)	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Discrimination														
PEDQ	1.33	.284	1.34	.173	1.47	.343	1.20	.265	1.26	.220	1.27	.268	1.42	.327
IAI	1.99	.602	2.14	.567	1.98	.793	1.85	.581	1.95	.392	2.01	.735	2.02	.598
PALS	1.51	.470	1.55	.420	1.65	.595	1.31	.424	1.36	.403	1.42	.479	1.74	.433
Acculturative Stress														
SAFE	2.50	.746	2.90	.792	2.48	.601	2.22	.771	2.43	.688	2.47	.811	2.46	.682
Academic Self-Efficacy														
PALS†	4.06	.880	3.77	.978	4.05	.617	3.98	1.01	4.26	.699	3.99	.826	4.05	1.04
Academic Achievement														
GPA	3.69	.349	3.76	.383	3.56	.349	3.78	.235	3.83	.188	3.69	.350	3.54	.399

†Academic Self-Efficacy subscale of the PALS

Table 3.

Zero-Order Correlations Among Key Variables

Measure	1	2	3	4	5	6	7	8	9	10
1. Interpersonal Discrimination	—									
2. Exclusion subscale (ID)	.873***	—								
3. Stigma subscale (ID)	.811***	.614***	—							
4. Threat subscale (ID)	.652***	.365***	.464***	—						
5. Work subscale (ID)	.874***	.704***	.548***	.513***	—					
6. Societal Discrimination	.099	.104	.025	-.118	.223*	—				
7. Classroom Discrimination	.356**	.341**	.245*	-.014	.458***	.311**	—			
8. Acculturative Stress	.611***	.533***	.508***	.389***	.530***	.146	.167	—		
9. Academic Self-Efficacy	-.127	-.152	-.248*	-.027	.029	-.274*	-.111	-.294**	—	
10. GPA	-.236*	-.195	-.222	-.222	-.153	.031	-.02	-.009	.235*	—

Note. ID = for each subscale on the Interpersonal Discrimination measure.

*p < .05

**p < .01

***p < .001

Full Mediating Model

The full model was then tested using multiple mediation, controlling for race, gender, age, and year in school, using bootstrapping techniques as recommended by Preacher and Hayes (2008). As shown in Figure 1, mediation analyses were run with interpersonal discrimination as the predictor variable, GPA as the outcome, acculturative stress and academic achievement as mediators, and race (dummy coded as Asian versus all others, Black versus all others, Latino versus all others, and multiracial versus all others), gender, and year in school, as covariates. When controlling for all covariates, the total effect of perceived interpersonal discrimination on academic achievement was not significant ($b = -.020$, $p = .88$). The direct effect of interpersonal discrimination did not reach significance ($b = -.111$, $p = .50$). When controlling for race, gender, age, and year in school, the A-B[1] path (interpersonal discrimination to acculturative stress) was significant ($b = 1.71$, $p = .0000$). The B[1]-C path did not reach significance ($b = .099$, $p = .11$). The A-B[2] path (interpersonal discrimination to academic self-efficacy) was not observed to be significant. However, the B[2]-C path was significant ($b = .124$, $p = .002$). The indirect effects for acculturative stress [95% CI = -.016, .365] and academic self-efficacy [CI = -.215, .023] were not significant.

Figure 1

Multiple Mediation Results
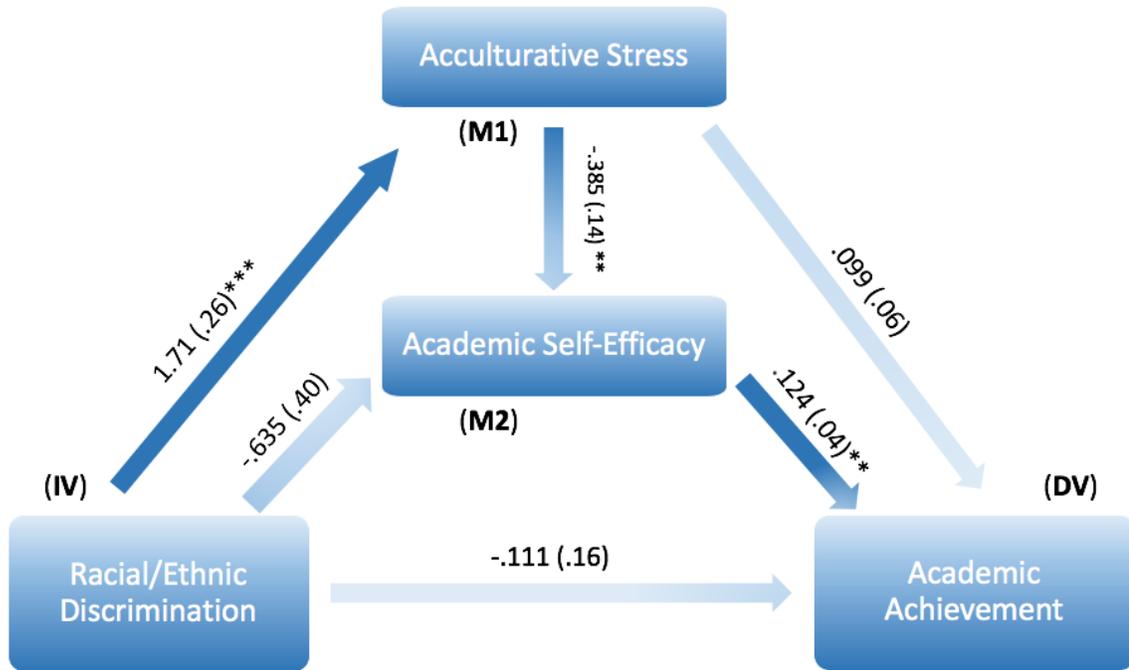
**p < .01

***p < .001

Discussion

The aim of this study was to investigate relations of multiple types and levels of discrimination and objective measures of academic achievement in a diverse sample of college students. Initially, I replicated other researchers' findings that interpersonal discrimination was significantly negatively associated with GPA, but the effects did not hold controlling for race and age. Some (Assari & Caldwell, 2018; Banerjee et al., 2018; Caldwell & Obasi, 2010; Chen et al., 2021; Hood et al., 2017; McNeil Smith & Fincham, 2015; Thomas et al., 2009), but not all (Winkle-Wagner, 2010), other investigators have included age and race as covariates in their analyses, making it difficult to compare across studies. Neither classroom nor societal discrimination were associated with GPA. These data are in contrast to other studies; however, most studies of classroom discrimination have focused on Black samples and included younger students, whereas this study included a diverse sample of undergraduates.

Interpersonal discrimination, but not other forms of discrimination, were positively associated with acculturative stress. Interpersonal stigmatization and societal discrimination were negatively significantly associated with academic self-efficacy. These findings suggest that different types and levels of discrimination may affect academic achievement through multiple pathways. Both stigmatization and societal discrimination may reflect the perception that academic resources and opportunities are blocked, undermining one's sense of academic self-efficacy. This undermined sense of self-efficacy can have deleterious impacts on one's academic achievement, as demonstrated in the results.

In contrast, all types of discrimination appear to generate acculturative stress - a sense that it is difficult to align with both mainstream culture and one's own ethnic group culture. Relations of interpersonal discrimination to acculturative stress were consistent across different types of interpersonal discrimination. However, neither classroom nor societal discrimination was associated with acculturative stress. This suggests that directly perceived interpersonal maltreatment through interactions with others may engender and promote the perception that one is a cultural 'outsider.'

In this sample, demographic factors (age and Latino descent) predict the bulk of variance in GPA. The findings suggest that other factors may account for disparities in academic achievement. The effects may be mediated through mechanisms that were not measured, such as depression or trauma exposure.

Limitations

It proved to be difficult to obtain objective measures of GPA from participants, limiting sample size. The missing data could potentially bias the findings, although no differences were found between those with and without GPA data on any of the key variables. The sample was diverse, but too small to compare effects across racial/ethnic groups. Also, the study was cross-sectional, limiting the ability to examine bidirectional effects, including those between academic achievement and academic self-efficacy. Future research may benefit from including additional measures of psychosocial stress (e.g., depression) to analyze the relations among these variables within a larger sample size over time. Despite the limitations of this study, the findings support the notion that additional research is necessary to understand the impact that racial discrimination has on racial/ethnic minority students and through which pathways their academic achievement

is undermined. Future research can contribute to advancing our understanding of the mechanisms that contribute to racial disparities in academic achievement and identify potential areas for intervention.

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VITA

Name: *Rebecca A. Steele*

Baccalaureate Degree: *Bachelor of Arts, Clark*

Atlanta University, Atlanta,

Major: Psychology

Date Graduated: *May, 2015*

Other Degrees and Certificates: *Master of Arts, Teachers*

College, Columbia

University, New York,

Major: Clinical and

Counseling Psychology

Date Graduated: *May, 2017*