

## ABSTRACT

### Assessing Experienced Discrimination in a College Student Population

Alexandra E. Pizzuto, Psy.D.

Mentor: Keith P. Sanford, Ph.D.

Experienced discrimination based on identity and appearance (or discrimination experience) is critical to assess among the college student population given its relationship to six key components of the college student experience. Investigating this variable requires the use of a psychometrically sound scale that demonstrates adequate validity and sensitivity; however, one of the most commonly used measures to assess discrimination experience in undergraduates—the Everyday Discrimination Scale (EDS; Williams et al., 1997)—suffers issues related to these two key scale properties. Therefore, the purpose of the present study was to develop a novel scale to measure discrimination experience in college students—the Academia Discrimination Experience Scale (ADES)—in order to improve upon the validity and sensitivity of the EDS.

It was hypothesized that the ADES would produce a good fit to a unidimensional confirmatory factor analysis model and provide high information in item response theory analyses. Further, it was hypothesized that the ADES would demonstrate convergent correlations with variables tapping the six key components of the college student experience. Finally, it was hypothesized that the ADES would demonstrate sensitivity to

detecting significant differences between groups with well-documented experiences of discrimination and groups with less documentation. All hypotheses were supported by the results of the present study, except for the hypothesis regarding significant correlations with the criterion variables. Although the ADES demonstrated promising features (i.e., the scale has a good factor structure, demonstrates high information across varying response levels, and is sensitive to detecting group differences), the scale failed to meet the criterion for convergent validity. The paper ends with a discussion regarding implications and limitations of this study as well as possible directions for future research.

Assessing Experienced Discrimination in a College Student Population

by

Alexandra E. Pizzuto, B.A., M.S.C.P.

A Dissertation

Approved by the Department of Psychology and Neuroscience

---

Wade C. Rowatt, Ph.D. Interim Chairperson

Submitted to the Graduate Faculty of  
Baylor University in Partial Fulfillment of the  
Requirements for the Degree  
of  
Doctor of Psychology

Approved by the Dissertation Committee

---

Keith P. Sanford, Ph.D.

---

Sara A. Dolan, Ph.D.

---

Alisha M. Wray, Ph.D.

---

Regina Hiraoka, Ph.D.

---

Jerry Z. Park, Ph.D.

Accepted by the Graduate School  
August 2023

---

J. Larry Lyon, Ph.D., Dean

Copyright © 2023 by Alexandra E. Pizzuto

All rights reserved

## TABLE OF CONTENTS

LIST OF FIGURES .....	vii
LIST OF TABLES .....	viii
ACKNOWLEDGMENTS .....	ix
DEDICATION .....	x
CHAPTER ONE .....	1
Introduction .....	1
Experienced Discrimination and Student Outcomes .....	2
Extant Measures of Experienced Discrimination .....	9
Three Criteria to Address Scale Validity and Scale Sensitivity .....	14
Theoretical Framework to Guide the Development of a Novel Scale .....	16
The Current Study .....	17
CHAPTER TWO .....	19
Method .....	19
Participants and Procedure .....	19
Data Cleaning .....	22
Measures .....	24
CHAPTER THREE .....	31
Results .....	31
Hypothesis 1 .....	31
Hypothesis 2 .....	38
Hypothesis 3 .....	44
Exploratory Follow-up Analysis .....	48
CHAPTER FOUR .....	53
Discussion .....	53
Limitations .....	60
Future Directions .....	61
APPENDIX A .....	64
Supplemental Analyses .....	64
Descriptive Statistics for Discrimination Experience Follow-up Questions .....	64
Measurement Invariance .....	68

APPENDIX B .....	72
Informed Consent .....	72
APPENDIX C .....	75
Measures and Demographics Questions .....	75
Academia Discrimination Experience Scale (ADES).....	75
Everyday Discrimination Scale (EDS) .....	78
Discrimination Experience Follow-up Questions .....	78
Academic Validation .....	79
General Interpersonal Validation .....	79
Interpersonal Resilience Inventory (IRI) .....	80
Emotional Engagement .....	81
Behavioral Engagement .....	82
Intrinsic Value.....	82
Cognitive Strategy Use .....	83
Self-Efficacy .....	84
Unweighted Grade Point Average (GPA).....	84
Postgraduate Educational Aspirations .....	84
K6 Generalized Distress Scale.....	85
Coping Strategies Inventory- Short Form (CSI-SF).....	85
Demographics Questions .....	86
Comments .....	88
REFERENCES .....	89

## LIST OF FIGURES

<i>Figure 3.1.</i> Test information curve for the Academia Discrimination Experience Scale (ADES) .....	37
<i>Figure 3.2.</i> Test information curve for the Everyday Discrimination Scale (EDS) .....	38
<i>Figure 3.3.</i> Academia Discrimination Experience Scale (ADES) scores for the target groups.....	46
<i>Figure 3.4.</i> Academia Discrimination Experience Scale (ADES) scores for the nontarget groups.....	47
<i>Figure 3.5.</i> Everyday Discrimination Scale (EDS) scores for the target groups .....	48

## LIST OF TABLES

Table 2.1 Number/Percentage of Participants Identifying with the Various Classifications of Each Identity and Appearance Variable.....	20-21
Table 3.1 Academia Discrimination Experience Scale (ADES) Item Standardized Loadings from CFA .....	32
Table 3.2 Everyday Discrimination Scale (EDS) Item Standardized Loadings from CFA.....	33
Table 3.3 Academia Discrimination Experience Scale (ADES) Item Discrimination Values from IRT Analysis .....	35
Table 3.4 Everyday Discrimination Scale (EDS) Item Discrimination Values from IRT Analysis .....	36
Table 3.5 Correlations with Criterion Variables and Tests for Differences Between Correlations.....	41
Table 3.6 Standardized Betas from Regression Equations Testing Incremental Convergent Validity .....	43
Table 3.7 Betas from a Regression Equation and <i>d</i> -statistics from Simple Contrasts for the Academia Discrimination Experience Scale (ADES) .....	51
Table A.1 Percent of Participants in Each Group and Discrimination Experience Means for Each Group Classification .....	66-67
Table A.2 Paired Samples <i>t</i> -tests With a Bonferroni Correction to Test for Significant Differences Between Discrimination Experience Means .....	68



## ACKNOWLEDGMENTS

First and foremost, I would like to extend my sincerest gratitude to my dissertation committee chair and faculty mentor, Dr. Keith Sanford, for his invaluable contributions during both this project and my graduate school career. I would also like to express sincere thanks to my committee members, Dr. Sara Dolan, Dr. Regina Hiraoka, Dr. Jerry Park, and Dr. Alisha Wray, for offering their time, support, and expertise in completing this project. I thank the clinical psychology faculty for providing supervision and mentorship to students in a manner that facilitates our success and professional and personal development. Thank you to my fellow graduate students for their friendship throughout the years; it has truly sustained me. Last but certainly not least, I would like to acknowledge my dearest friend, Lauren Simicich, for her unwavering love and support and for being my source of comfort when I need it most.

## DEDICATION

To my parents, Mark and Kimberly Pizzuto, for your dedication to and enthusiasm for my personal and professional pursuits, for serving as my source of strength, and for providing me with the deepest love I have ever known.

## CHAPTER ONE

### Introduction

Many undergraduate students, particularly those from underrepresented or marginalized backgrounds, report experiences with discrimination during their collegiate careers (e.g., Cokley et al., 2011; D’Augelli & Hershberger, 1993). *Experienced discrimination based on identity and appearance* (which will be used interchangeably with *discrimination experience* in this paper) is important to assess because it is associated with several key outcomes among college students, including outcomes related to mental health, physical health, and academic performance (Carter et al., 2019; Chavous et al., 2018; Lui & Quezada, 2019; Paradies et al., 2015; Pascoe & Smart Richman, 2009). Experienced discrimination, which is sometimes referred to in the literature as *perceived discrimination* or *self-reported discrimination*, involves various aspects of cognition, such as perceptions and belief systems, that are derived from and that represent a person’s experience of being exposed to discrimination (Hausmann et al., 2011; Sanford & Pizzuto, 2022). The need to assess experienced discrimination based on identity and appearance becomes elucidated upon considering the increased diversity seen on college campuses over the past few decades (American Council on Education, 2020) as well as the greater awareness that an individual may possess multiple marginalized identities that are prone to discriminatory treatment (Billingsley & Hurd, 2019). Accordingly, Billingsley and Hurd (2019) argue that researchers should attempt to develop a clearer understanding of how underrepresented college students experience

discriminatory treatment across various social identities and appearance-related factors. One of the first steps in appropriately exploring experienced discrimination among college students is to ensure that researchers utilize a well-validated instrument that assesses the relevant types of perception for this population. For reasons explicated below, it may be possible to improve upon the validity and sensitivity of current measures through the development of a novel, psychometrically sound scale that assesses experienced discrimination in an undergraduate population.

### *Experienced Discrimination and Student Outcomes*

It is crucial to develop the best instrument possible for assessing discrimination experience in college students because this variable is expected to be associated with several key components of student experience on college campuses. Jones (2018) provides a conceptual model for delineating key dimensions of student experience that are salient for undergraduates and that may be related to discrimination experience in this population. Utilizing Bronfenbrenner's (1977) ecological model, which has been used as a framework to guide research on postsecondary institutions (Renn & Arnold, 2003), Jones argues that college students are located within a broader macrosystem (the undergraduate institution) that encompasses various influences (or microsystems) that have the potential to affect one's experience on campus. Specifically, Jones outlines several key components of a college student's experience to include (a) interactions with faculty, (b) interactions with peers, (c) engagement in academic life, (d) postgraduate educational aspirations, (e) psychological distress, and (f) coping strategies. Notably, there is a large body of research suggesting that discrimination experience is associated with all six of these components.

First, experienced discrimination has been shown to impact college students' perceptions of their interactions with faculty (e.g., Hurtado et al., 2015). The theory of validation developed by Rendón (1994) suggests that college students may receive two types of validation from interactions with faculty, namely *academic validation* and *interpersonal validation*. Academic validation involves the extent to which faculty help students to “trust their innate capacity to learn and to acquire confidence in being a college student” (Rendón, 1994, p. 12), while interpersonal validation occurs when faculty promote students' intrapersonal and interpersonal development within the classroom more specifically and the institutional setting more broadly. Along these lines, research conducted by Wann (2013) shows that experienced discrimination is significantly, negatively associated with perceptions of interpersonal validation from faculty among Black or African American, Latinx, and White college students. Similarly, Hurtado and colleagues (2015) provide evidence that experienced discrimination is significantly, negatively associated with both academic validation and interpersonal validation among a racially diverse sample of 20,460 students (27.4% Asian, 2.9% Black or African American, 20.5% Latinx, 0.3% Native American, 41.6% White, and 7.3% multiracial).

Second, experienced discrimination has been shown to impact college students' interactions with peers (e.g., Juang et al., 2016). For instance, Juang and colleagues (2016) found that experienced discrimination was associated with negative interactions with peers among a sample of racial/ethnic minority college students. Similarly, in a sample of 542 undergraduate students (271 identified as a sexual minority, 271 identified as heterosexual), sexual minority students reported more negative interactions with peers

than heterosexual students (Mennicke et al., 2020). This research is consistent with Tinto's (1993) theory of student departure which posits that a college student's experiences at university, including discrimination experiences and interactions with other university members (e.g., peers), influence the extent to which they successfully integrate into the institution. Thus, it appears that negative peer interactions may provide evidence that supports messages of exclusion that are communicated by discriminatory treatment.

Third, experienced discrimination has been shown to predict college students' engagement in academic life (e.g., Inman et al., 2021). Fredricks and colleagues (2004) propose that student engagement includes cognitive, emotional, and behavioral components. Specifically, (a) *cognitive engagement* includes students' intrinsic motivation to learn and to seek education, students' ability or willingness to employ metacognitive strategies needed for comprehension of complex material and mastery of skills, and students' belief in their ability to complete academic tasks; (b) *emotional engagement* includes students' feelings and attitudes about school and their coursework; and (c) *behavioral engagement* includes students' active participation in activities or behaviors in the classroom that facilitate academic performance as well as their participation in extracurricular school activities (Fredricks et al., 2004). Of note, experienced discrimination has been linked to the various dimensions of student engagement. For instance, experienced discrimination is significantly, negatively associated with aspects of behavioral engagement among a sample of international undergraduate and graduate students attending a university in the United States (Karuppana & Barari, 2010). In addition, discrimination experience was significantly,

negatively correlated with cognitive engagement among a sample of Asian and White university students, and Asian students reported more discrimination than did White students (Inman et al., 2021). Findings from Zhu and colleagues (2019) demonstrate that experienced discrimination is significantly associated with aspects of cognitive, emotional, and behavioral engagement among college students attending university in China. Notably, results regarding the direction of the relationship between experienced discrimination and student engagement are sometimes mixed. For example, research by Okagaki and colleagues (2009) demonstrates that experienced discrimination is positively associated with cognitive aspects of student engagement (e.g., how valuable one perceives an education to be) among American Indian college students. This research may suggest that perception of discriminatory treatment motivates some minority individuals to seek an education for the purpose of overcoming systemic barriers that are in place for their group. Overall, however, it appears there is greater evidence suggesting that experienced discrimination is negatively associated with student engagement in academic life.

Related to the concept of behavioral engagement, experienced discrimination has been shown to negatively affect undergraduates' academic performance, which can be assessed by measuring college grade point average (GPA; Chavous et al., 2018). Indeed, persons of color who report discrimination experiences on their college campus tend to also report lower GPAs than individuals who do not report such experiences (Park et al., 2018). Similarly, Stevens and colleagues (2018) found that Hispanic and Asian students, in particular, were more likely than White students to report that discrimination experiences had negatively impacted their GPA. Furthermore, lesbian, gay, bisexual,

transgender, queer/questioning, and other nonheterosexual identified (LGBTQ+) college students who report hearing heterosexist phrases on their campus demonstrate worse academic outcomes, including lower GPAs (Mathies et al., 2019).

Fourth, experienced discrimination has been shown to predict college students' postgraduate educational aspirations (e.g., Li et al., 2021). This line of research is largely grounded in stigma consciousness theory (Pinel, 1999), which proposes that individual differences exist in how much a person is aware of the stereotypes associated with their group and how much they believe these stereotypes to pervade their interactions. Individuals who believe there is a high probability that they will be stereotyped and/or discriminated against are considered to have high stigma consciousness, and research shows that these individuals are more likely to experience long-term, negative effects on their postgraduation aspirations compared to individuals who have lower stigma consciousness (Pinel, 1999). Along these lines, in a sample of 2,717 undergraduate students, individuals who perceived more educational and career barriers due to race/ethnicity-based and gender-based discrimination were less likely to pursue postgraduate education upon graduating despite aspiring to do so prior to attending college (Li et al., 2021). Among an undergraduate sample of women (35% Asian, 31% White, and 27% Latinx) pursuing a major in science, technology, engineering, and mathematics (STEM), discrimination based on gender predicted lower postgraduate educational aspirations in a STEM-related field (Leaper & Starr, 2019). In a sample of LGBTQ+ undergraduate students, experienced discrimination predicted indecision about pursuing postgraduate education (Schmidt et al., 2011).



Fifth, experienced discrimination has been shown to predict psychological distress among undergraduate students (e.g., Burn et al., 2005). Research with LGBTQ+ individuals provides a good example of how experienced discrimination is linked to psychological distress. According to minority stress theory, LGBTQ+ individuals endure chronic stress related to heterosexist norms which may manifest as experiences of prejudice, stigma, and discrimination (Meyer, 2003). Given that heterosexist norms and expectations still plague the United States today, the LGBTQ+ individual experiencing discrimination may believe that they do not belong in society. When these discrimination experiences accumulate over time, the LGBTQ+ individual is at increased risk of developing poor self-evaluations and facing greater psychological distress (Meyer, 2003; Meyer et al., 2011; Szymanski, 2009; Szymanski & Balsam, 2011; Waldo et al., 1998). The extant literature provides evidence suggesting that minority stress theory can explain the experiences of LGBTQ+ college students, particularly in the realm of experiencing psychological distress that can manifest as problems related to anxiety, depression, and poor self-esteem (Burn et al., 2005; Seelman et al., 2017; Silverschanz et al., 2008; Woodford et al., 2014; Woodford et al., 2015).

Evidence of the relationship between experienced discrimination and psychological distress can also be drawn from research with student groups holding other identities. For instance, Billingsley and Hurd (2019) used the Integrative Model of the Study of Developmental Competencies in Minority Children (Coll et al., 1996) to guide their research on how experienced discrimination among underrepresented college students impacts their levels of psychological distress. The researchers defined underrepresented students to include students of color, first generation students, and

students from low-income backgrounds, and all students attended a predominantly White institution. Results from Billingsley and Hurd demonstrate that experienced discrimination predicts increased levels of psychological distress (assessed via depressive symptoms) among these underrepresented student groups. Similarly, among Asian American and Latinx college students, discrimination experience is significantly associated with higher levels of psychological distress, state and trait anxiety, and depressive symptoms (including suicidal ideation; Hwang & Goto, 2008). For college students who identify as Black or African American, experienced discrimination is related to poorer psychological adjustment (e.g., increased depression, reduced life satisfaction; Banks, 2010; Prelow et al., 2006). Finally, weight discrimination and religious discrimination each predict greater levels of psychological distress among undergraduates (Cheng et al., 2018; Tineo et al., 2021).

Sixth, not only does experienced discrimination predict psychological distress among college students, but it also predicts utilization of two key coping strategies (e.g., Jochman et al., 2019; Utsey et al., 2000), particularly *disengagement coping* and *engagement coping*. Disengagement coping involves attempts to eliminate or to orient oneself away from stressors physically, mentally, or emotionally, and thus, it includes strategies that are often avoidant, passive, and maladaptive in nature (e.g., social withdrawal, wishful thinking; Tobin et al., 1989). Alternatively, engagement coping involves attempts to effectively approach and manage stressors, and thus, it includes problem-solving strategies that are often proactive and adaptive (e.g., seeking social support, cognitive restructuring; Tobin et al., 1984). Along these lines, the extant literature shows that experienced discrimination is significantly, positively associated

with utilization of both disengagement and engagement coping strategies among college students identifying as Black or African American women (Szymanski & Lewis, 2016). Further, there is evidence that discrimination experience is significantly, positively associated with various dimensions of disengagement coping strategies (i.e., problem avoidance, social withdrawal, wishful thinking, self-criticism) and engagement coping strategies (i.e., problem solving, connection to social support, expression of emotion, cognitive restructuring) among college students identifying as Mexican American (Villegas-Gold & Yoo, 2014).

All things considered, the extant literature provides evidence that experienced discrimination is related to several key components of student experience among an undergraduate population, including student-faculty interactions, interactions with peers, engagement in academic life, postgraduate educational aspirations, psychological distress, and coping strategies. Thus, experienced discrimination appears to be a consequential variable for researchers to investigate, and as such, there is a clear need to have the best possible scale to measure this variable. For reasons explicated below, it may be possible to improve upon existing scales through the development of a novel, psychometrically sound scale that measures discrimination experience in this population.

#### *Extant Measures of Experienced Discrimination*

Experienced discrimination among college students has been assessed with a variety of measures. Some researchers have chosen to utilize scales that specifically assess one form of discrimination relevant to their research question. For instance, to assess the influence of racial/ethnic discrimination, researchers have used the General Ethnic Discrimination Scale (GED; Landrine et al., 2006), the Racism and Life

Experiences Scale (RaLES; Harrell, 2000; Harrell et al., 1997), and the Perceived Ethnic Discrimination Questionnaire (PEDQ; Brondolo et al., 2005). Other investigators have utilized measures for additional subgroups of college students (e.g., LGBTQ+ students; Hong et al., 2016). Still, researchers tend to utilize measures that capture the frequency with which one experiences overt, episodic discrimination events. Of note, the Everyday Discrimination Scale (EDS; Williams et al., 1997) has been frequently utilized across studies (Becerra et al., 2021; Busby et al., 2020; Cadenas et al., 2021; Cokley et al., 2017; Dover et al., 2020; Fahey et al., 2021; Hatzenbuehler et al., 2011; Jones & Greene, 2016; Le & Iwamoto, 2019; Le et al., 2021; Lui, 2020; McDermott et al., 2020; Suh et al., 2019), and it remains among the most commonly used scales to assess experienced discrimination among undergraduate students (Bastos et al., 2010).

Although these scales may be adequate at detecting discrimination due to a single identity, research shows that undergraduates experience discriminatory treatment based on multiple identity-related factors, including race/ethnicity (Johnston-Guerrero, 2016; Swim et al., 2003), sexual orientation (Schmidt et al., 2011), gender identity or expression (McKinney, 2005), religious affiliation (Lowe et al., 2019), weight (Simone et al., 2020), and disability status (Francis et al., 2019). Although discrimination experience is especially well established in the literature for persons of color and individuals identifying as LGBTQ+, less research has been conducted in other marginalized populations. Nevertheless, discrimination experience is important to assess in all groups. Indeed, research suggests that discrimination experiences related to religious affiliation are at least as distressing as discrimination due to other marginalized identities (Rippy & Newman, 2006). Additionally, for college students living with a disability, discrimination

due to disability status is associated with greater levels of psychological distress and poorer perceptions of academic self-efficacy (Lett et al., 2020). Other research highlights the importance of considering how the possession of multiple marginalized identities may impact the experiences of college students. For example, individuals identifying as Black or African American women are subject to experiencing both racism and sexism concurrently (Crenshaw, 1989), and there is evidence that discrimination based on race/ethnicity and discrimination based on gender identity contribute to similar outcomes (e.g., psychological distress) among college students (King, 2003). Similarly, results from Simone and colleagues (2020) demonstrate that weight discrimination is significantly related to higher rates of eating disorders as well as greater levels of academic impairment among LGBTQ+ college students. This study in particular highlights the importance of assessing discrimination based on one's social identities *and* appearance. All things considered, it would be especially valuable to have a single scale that assesses the six key types of discrimination experience based on identity and appearance (i.e., race/ethnicity, sexual orientation, gender identity or expression, religious affiliation, weight, disability status) among an undergraduate population. Although the EDS includes follow-up questions tapping the perceived reason for the discrimination, and although the scale could be reworded with minor adjustments to tap the six types of discrimination experience, there are questions about its validity and sensitivity that could be adequately addressed with the development of a novel scale.

#### *Everyday Discrimination Scale: Scale Validity and Scale Sensitivity*

As it stands, it is unclear whether the EDS measures the full range of discrimination experience in academia, highlighting two concerns about the scale's

validity, particularly (a) content validity and (b) response process validity. First, on the EDS, discrimination experience is defined as the *frequency* of episodic discrimination events (Williams et al., 1997). Although this is a well-supported definition, a recent study measuring discrimination in medical settings suggests that there is theoretical reason to define discrimination experience to include key *perceptions* of an event (Sanford & Pizzuto, 2022), which may improve a scale's content validity. Utilizing this framework, experienced discrimination among college students can be defined to include the four perceptions that: (a) faculty and peers engage in negative behaviors toward oneself, due to identification with certain groups (this perception is most commonly assessed on current measures of experienced discrimination; Williams et al., 1997), (b) faculty and peers endorse negative beliefs about oneself, due to identification with certain groups (this is related to the notion of stigma consciousness; Pinel, 1999), (c) there is a high likelihood one will not be treated fairly, due to identification with certain groups (this is related to the concept regarding beliefs about a particular "ism," such as beliefs about sexism; Glick & Fiske, 1999), and (d) the undergraduate institution devalues one's own group and/or endorses policies that promote disparities (this is related to the concept of systemic forms of discrimination or "isms," such as systemic racism; Feagin, 2006). All nine items on the EDS assess the frequency of the perception that others engage in negative behaviors toward the self (Williams et al., 1997), and most investigations of the factor structure of the EDS suggest that the scale is a unidimensional measure of discrimination (Bernstein et al., 2011; Clark et al., 2004; Lewis et al., 2012; Reeve et al., 2011; Shariff-Marco et al., 2011). Thus, a key question is whether a scale with a broader set of items will remain unidimensional or if it will produce a scale that lacks coherence.

Notably, Sanford and Pizzuto (2022) present results from factor analysis showing that healthcare discrimination experience can be defined more broadly to include the four key perceptions while still being assessed on a unidimensional scale. This supports the present paper's definition of discrimination experience in academia and may be an optimal way to parsimoniously capture the full breadth of discrimination experience among an undergraduate population. Second, the items on the EDS presume that respondents perceive discrete discrimination events rather than events that involve degrees of certainty, and this can undermine response process validity (Urbina, 2014). Indeed, research suggests that discrimination experiences tend to exist along continua of subtlety, formality, and intentionality (Jones et al., 2017), making it difficult for people to determine whether a specific event was an episode of discrimination due to the varying degrees of ambiguity that might be present.

Issues concerning content validity and response process validity raise the risk of problems with two key types of sensitivity, namely (a) sensitivity to low-level discrimination experiences and (b) sensitivity to detect theoretically expected group differences. To illustrate, when the EDS has been used to assess discrimination experience among college students, it often produces a low mean, a high skew, and a relatively high number of people from marginalized groups reporting zero discrimination (e.g., nearly 25% in Chen et al., 2014). This is problematic for a couple of key reasons. First, a scale that poorly captures the full scope of discrimination experience (meaning it has poor content validity) may have an excessive number of minority students reporting zero discrimination experiences. Second, a scale with poor content validity may shrink the size of group differences that have been well documented in the literature, and this is

a key scale validation criterion (Urbina, 2014). Indeed, many studies demonstrate that significant differences in perceptions of discrimination experience exist among various groups (Hausmann et al., 2010; Kandula et al., 2009; Kim et al., 2017).

Although valuable research has already been conducted on existing measures of discrimination experience, there is reason to believe that a novel scale could demonstrate improved content validity, response process validity, and sensitivity. This issue becomes highly important upon considering the ample research that supports discrimination experience as a consequential variable to assess among college students.

### *Three Criteria to Address Scale Validity and Scale Sensitivity*

Three criteria can be utilized to determine whether a novel scale represents an improvement on the EDS regarding the issues of scale validity and scale sensitivity. First, a new, single scale with items that capture a broad range of discrimination experience components should produce a good fit to a unidimensional confirmatory factor analysis (CFA) model, and it should provide high information in item response theory (IRT) analyses. These results would suggest that it is meaningful and valid to conceptualize discrimination experience as a unidimensional construct and that a scale assessing a wide range of discrimination experience would have better content validity than a scale measuring only a single component of the construct. Additionally, a single scale would be more parsimonious than having several scales measuring multiple overlapping indicators of the same underlying construct. Second, the new scale should demonstrate convergent correlations with outcomes that are associated with experienced discrimination among an undergraduate population, namely student-faculty interactions, interactions with peers, engagement in academic life, postgraduate educational



aspirations, psychological distress, and coping strategies. Further, if the new scale is adequate at detecting a breadth of discrimination experience, it should produce significantly stronger correlations with each criterion variable and significantly larger standardized beta weights when compared to the EDS. Third, the new scale should be able to detect a significant difference between individuals who belong to groups with well-documented experiences of discrimination and individuals who do not belong to such groups. As alluded to above, the largest portion of research evidence about discrimination experience contributing to negative outcomes among college students pertains to two groups, namely persons of color and LGBTQ+ individuals. Additionally, results from Hightow-Weidman and colleagues (2011) demonstrate that discrimination due to race/ethnicity and sexual orientation are commonly experienced forms of discrimination among youth and emerging adults residing in large metropolitan areas in the United States. Thus, while people experience discrimination based on many dimensions of identity and appearance, discrimination experience should be especially clear and evident when assessing persons of color and LGBTQ+ individuals. This leads to hypotheses regarding scale validity that can be tested with these two groups, which can be referred to as *target groups with well-documented experiences of discrimination*. These hypotheses specifically pertain to issues regarding floor effects and histograms. Along these lines, the new scale should reveal a significantly smaller percent of individuals from the target groups (i.e., persons of color, LGBTQ+ individuals) scoring at the scale floor (i.e., endorsing zero discrimination experiences) compared to individuals from the *nontarget groups* (i.e., those who do not identify as a person of color or as LGBTQ+), reducing the likelihood of a floor effect. In this regard, a visual inspection of

histograms should reveal that scores for the target groups more closely approximate a normal, bell-shaped curve compared to scores for the nontarget groups. Additionally, upon visual inspection of histograms, scores for the target groups on the new scale should come closer to approximating a normal curve when compared to EDS scores for the target groups.

Using these three criteria, it is crucial to develop a novel scale to assess discrimination experience in academia that is both valid and sensitive. This is an important research area to investigate given that experienced discrimination based on identity and appearance is associated with several key dimensions of student experience among undergraduates.

#### *Theoretical Framework to Guide the Development of a Novel Scale*

By modifying the Healthcare Discrimination Experience Scale (HDES; Sanford & Pizzuto, 2022), the issues of scale validity and scale sensitivity in the literature on experienced discrimination in academia can be potentially addressed. The HDES was recently developed across a couple of studies to measure discrimination in a healthcare setting. Addressing issues of content validity, the scale includes a breadth of items that map onto the key components of discrimination experience in healthcare. To address response process validity, the HDES items specifically assess an individual's *confidence* in non-discrimination rather than the frequency of episodic discrimination events. Additionally, the results of Sanford and Pizzuto (2022) support the validity of the scale through the application of the three criteria noted above. First, the HDES produced a good fit to a unidimensional CFA model, and the scale demonstrated high discrimination across varying response levels in IRT analysis. Second, the scale demonstrated

convergent correlations with outcomes that are associated with experienced discrimination in healthcare settings. Third, in comparison to an adaptation of the EDS that has been used in a medical setting (Bird & Bogart, 2001), the HDES had a smaller percent of persons of color reporting zero discrimination experiences, highlighting the sensitivity of the HDES. Relatedly, the HDES better detected differences in healthcare discrimination between persons of color and White people than did the adapted EDS, further enhancing the scale's sensitivity.

All things considered, adapting the HDES for use with college students is likely to produce a psychometrically sound scale that will address key issues of existing measures of discrimination experience in academia.

### *The Current Study*

The present study aimed to develop and validate the Academia Discrimination Experience Scale (ADES), an adapted version of the HDES (Sanford & Pizzuto, 2022), in a college student population. Three hypotheses were proposed.

#### *Hypothesis 1*

The ADES should produce a good fit to a unidimensional CFA model, and it should provide high information in IRT analyses.

#### *Hypothesis 2*

The ADES should demonstrate convergent correlations with outcomes that are associated with experienced discrimination among an undergraduate population, namely student-faculty interactions, interactions with peers, engagement in academic life, postgraduate educational aspirations, psychological distress, and coping strategies.

Further, the ADES—compared to the EDS—should produce significantly stronger correlations with each criterion variable and significantly larger standardized beta weights.

### *Hypothesis 3*

The ADES should reveal a significant difference between the target groups with well-documented experiences of discrimination (i.e., persons of color, people identifying as LGBTQ+) and nontarget groups (i.e., people who do not identify as a person of color or as LGBTQ+) in their report of discrimination experience, with target groups endorsing higher levels of discrimination. Further, the ADES should reveal a significantly smaller percent of individuals from the target groups scoring at the scale floor (i.e., endorsing zero discrimination experiences) compared to individuals from the nontarget groups. Finally, a visual inspection of histograms should reveal that ADES scores for the target groups more closely approximate a normal, bell-shaped curve compared to ADES scores for the nontarget groups. Upon further inspection of histograms, ADES scores for the target groups should come closer to approximating a normal curve when compared to EDS scores for the target groups.

## CHAPTER TWO

### Method

#### *Participants and Procedure*

Participants included 518 undergraduate students from Baylor University who were recruited for participation in an online survey through the University's SONA system. Students could participate in the study if they attested to being at least 18 years old. Table 2.1 provides the percent of participants endorsing all the different classification options for all identity and appearance variables. To summarize the results depicted in Table 2.1, 45.2% of the sample ( $N = 234$ ) identified as a person of color; 10.6% ( $N = 55$ ) identified as a sexual minority; 18.9% ( $N = 98$ ) endorsed having a disability; 1.5% ( $N = 8$ ) identified as a religious minority; 30.3% ( $N = 157$ ) endorsed having a Body Mass Index (BMI) in the overweight category; and 65.1% ( $N = 337$ ) identified as a female. Except for the height and weight variables, which participants responded to using a text box, all other identity and appearance classifications were assessed using a menu of possible response options. Regarding other sample characteristics, the sample's mean age was 19.09 ( $SD = 1.07$ ), and 60.4% of the sample ( $N = 313$ ) identified that they were a first-year student at Baylor University. In addition, 66.8% of the sample ( $N = 346$ ) endorsed being single at the time of the study.

Table 2.1

*Number/Percentage of Participants Identifying with the Various Classifications of Each Identity and Appearance Variable*

Identity and appearance variables	Number/percentage of participants with the identity or appearance
<b>Race/ethnicity<sup>a</sup></b>	
Asian American	81 (15.6%)
Black or African American	47 (9.1%)
American Indian or Native American	0 (0.0%)
Hispanic or Latino(a)	80 (15.4%)
Pacific Islander or Native Hawaiian	5 (1.0%)
White (non-Hispanic)	284 (54.8%)
Having a race/ethnicity not on the list	21 (4.1%)
<b>Sexual orientation<sup>b</sup></b>	
Asexual	8 (1.5%)
Bisexual	34 (6.6%)
Gay	6 (1.2%)
Lesbian	2 (0.4%)
Pansexual	2 (0.4%)
Queer	2 (0.4%)
Heterosexual/straight	463 (89.4%)
Having a sexual orientation not on the list	1 (0.2%)
<b>Gender identity or expression<sup>c</sup></b>	
Cisgender male	172 (33.2%)
Cisgender female	337 (65.1%)
Transgender male	0 (0.0%)
Transgender female	0 (0.0%)
Non-binary	1 (0.2%)
Genderqueer/gender nonconforming	1 (0.2%)
Having a gender identity not on the list	7 (1.4%)
<b>Disability status<sup>d</sup></b>	
Having a disability	98 (18.9%)
Not having a disability	420 (81.1%)
<b>Religion<sup>e</sup></b>	
Jewish	0 (0.0%)
Muslim	8 (1.5%)
Agnostic	38 (7.3%)
Atheist	13 (2.5%)
Buddhist	8 (1.5%)
Christian	413 (79.7%)
Hindu	16 (3.1%)
Sikh	2 (0.4%)
Having a religious preference not on the list	20 (3.9%)

Weight perception	
Very underweight	4 (0.8%)
Slightly underweight	73 (14.1%)
About the right weight	286 (55.2%)
Slightly overweight	137 (26.4%)
Very overweight	18 (3.5%)
Weight <sup>f</sup>	
Overweight	157 (30.3%)
Nonoverweight	361 (69.7%)

*Note.* <sup>a</sup> Persons of color included participants who identified as Asian American, Black or African American, American Indian or Native American, Hispanic or Latino(a), Pacific Islander or Native Hawaiian, or having a race/ethnicity not on the list. <sup>b</sup> Sexual minorities included participants who identified as asexual, bisexual, gay, lesbian, pansexual, queer, or having a sexual orientation not on the list. <sup>c</sup> Females included participants who identified as a cisgender female or transgender female. <sup>d</sup> Persons who endorsed having a disability chose one or more of the following response options: Having a learning disability (e.g., dyslexia), having a psychological disorder (e.g., depression, PTSD, ADHD, autism spectrum disorder), having a physical or sensory disability (e.g., speech, sight, mobility, hearing), having a chronic illness (e.g., cancer, diabetes, autoimmune disorders), having a disability not listed. <sup>e</sup> Religious minorities included participants who identified as Muslim. Note that participants who identified as Jewish would have been included in this group had this identity been endorsed. Indeed, there is research showing that individuals who identify as Jewish or Muslim experience a clear lack of privilege in the United States today (Scheitle & Ecklund, 2020). <sup>f</sup> Participants were categorized as overweight if they had a BMI greater than or equal to 25.00, while participants were categorized as nonoverweight if they had a BMI less than or equal to 24.99. Such a categorization is consistent with practice in medical settings to date (Nuttall, 2015). To calculate BMI, participants were asked to provide their height and weight.

Participants who provided informed consent to participate in the study were asked to complete a series of questionnaires outlined below in the Measures section. These questionnaires tapped the study's key variables of interest, namely discrimination experience and the criterion variables noted above. Upon completion of these questionnaires, participants responded to demographics questions pertaining to age, year of study, relationship status, and parental education. For completing the survey in full, participants either received partial fulfillment of a research requirement and/or extra

credit in one of their courses at Baylor University. The protocol for this study was reviewed by the University's Institutional Review Board.

### *Data Cleaning*

Upon downloading the original data set from Qualtrics (i.e., the online platform that distributed the survey) and sorting the file by SONA ID number, some ID numbers were listed twice or more, and thus, it was presumed that some respondents took the questionnaire more than once. To remove the duplicate submissions, the primary case was kept while the duplicate case or cases were excluded from the data set; this accounted for the exclusion of 48 duplicate submissions.

Two *a-priori* criteria for data cleaning were established. The first criterion was that cases would be excluded for nonsensical responding (e.g., providing one's height in feet and inches in a manner that is impossible, such as indicating 40 inches when the maximum possible number of inches is 11), inconsistent responding (e.g., indicating one's status as a first-year student in a text box and then indicating their status as a fourth-year student in a question with a menu of response options), or incomplete responding (e.g., not providing a response to the weight variable, which was a key group classification variable of interest). This criterion was established to ensure that all key data analyses could be conducted and to exclude cases who possibly did not respond to the survey in a careful manner. It is reasonable to assume, for example, that an individual who provided an impossible height was not paying careful enough attention to parts of the survey. Overall, 16 cases were excluded based on the first criterion.

The second criterion was that a time check would be used to catch overly fast and overly slow responding once all cases had been appropriately excluded from the data set



for reasons pertaining to the first criterion. Specifically, the second criterion necessitated that cases would be flagged if their responses were more than two standard deviations from the mean duration it took for participants to complete the survey. It was established that cases who failed this time check would be excluded from the data analysis, and thus, would not be counted in the total sample size. It is important to note that this time check was conducted twice. During the first time check, six cases scoring more than two standard deviations above the mean duration time were identified and subsequently deleted. No one scored more than two standard deviations below the mean duration time. Upon deleting these cases, the researcher identified two additional cases that should have been deleted based on the first criterion, and thus, these cases were deleted from the data set (these two cases are reflected above in the total number of cases deleted based on the first criterion). Then, the second time check was conducted, for two reasons. First, it seemed appropriate to conduct a second time check after *all* appropriate cases had been deleted based on the first criterion. Second, before the first time check was conducted, the standard deviation of the duration time was rather large (30,942 seconds or 8.6 hours) given there were outliers in the data set. Indeed, one respondent took 125 hours to complete the survey. Once the first time check was conducted and the two additional cases were deleted, the standard deviation of the duration time was much smaller (6,861 seconds or 1.9 hours). Thus, once the outliers had been removed, the second time check provided a more stringent check for identifying overly fast and overly slow responders, and hence, a more stringent cleaning of the data set. Overall, the second time check led to the deletion of 12 cases scoring more than two standard deviations above the mean

duration time. Again, no one scored more than two standard deviations below the mean duration time. In total, 18 cases were deleted based on the second criterion.

Once the two *a-priori* criteria for data cleaning had been applied, 34 cases (out of 552 non-duplicate cases obtained) were excluded from the analyses, with the final *N* totaling 518.

### *Measures*

Participants responded to the key measures listed below as well as demographics questions pertaining to age, year of study, relationship status, and parental education; all the measures and demographics questions are included in Appendix C. For parental education, responses were dummy coded such that 1 = postbaccalaureate education (i.e., master's degree, doctoral degree, professional degree) and 0 = all else (i.e., none, vocational certificate, high school diploma or GED, associate degree, bachelor's degree, other). For participants who endorsed having one parent only ( $N = 21$ ), seven of the participants indicated the parent had postbaccalaureate education. For participants who endorsed having at least two parents ( $N = 497$ ), 204 of the participants indicated the first parent had postbaccalaureate education and 141 participants indicated the second parent had postbaccalaureate education. For participants who endorsed having a third parent ( $N = 53$ ), 11 of the participants indicated the third parent had postbaccalaureate education. For participants who endorsed having a fourth parent ( $N = 24$ ), five of the participants indicated the fourth parent had postbaccalaureate education. Finally, for participants who endorsed having a fifth parent ( $N = 3$ ), zero of the participants indicated the fifth parent had postbaccalaureate education.

### *Academia Discrimination Experience Scale (ADES)*

Experienced discrimination in academia was assessed using the ADES, an adapted version of the HDES (Sanford & Pizzuto, 2022). The ADES included a breadth of items that likely map onto the key components of discrimination experience in academia, and like the HDES, it specifically assessed participants' confidence in non-discrimination (rather than the frequency of episodic discrimination events). On a preliminary section of the ADES, participants were asked to categorize themselves based on their identity and appearance with regard to the six demographic variables listed in Table 2.1, using the response options listed in the table. Afterward, participants were asked to rate their perceptions of discrimination experience. Participants read the following instructions: "You reported having the following identity or appearance: [their chosen answers to each of the six categories were piped in]. The questions on this page ask about your experiences as a college student with this identity or appearance." Then, participants were asked to respond to six items tapping their experiences and feelings on campus as a member of the groups they had indicated. Table 3.1 includes a full list of ADES items and their respective response options. Higher total ADES scores indicated greater levels of experienced discrimination. Cronbach's alpha for the ADES was .87.

### *Everyday Discrimination Scale (EDS)*

The nine-item EDS developed by Williams and colleagues (1997) was used as an alternate measure of experienced discrimination. As noted above, this instrument is among the most commonly used scales to assess discrimination experience in academic settings, and it has been found to be predictive of several negative mental health and physical health outcomes, such as depression, anxiety, high blood pressure, and increased

rates of stroke (Paradies et al., 2015; Williams, Lawrence, et al., 2019). Further, the EDS has demonstrated adequate internal consistency, convergent validity, and discriminant validity across various populations (Barnes et al., 2004; Williams et al., 1997). For the present study, items were modified by adding the words, “due to your identity or appearance,” to the beginning of each item; the rest of the item matched the wording used on the EDS. For example, participants were asked to rate the frequency of discrimination experiences, such as, “Due to your identity or appearance, you are treated with less courtesy than other people are,” on a scale ranging from 1 (Almost every day) to 6 (Never). All items were scored so that higher scores indicated more frequent discrimination experiences. Cronbach’s alpha for the EDS was .93.

#### *Discrimination Experience Follow-up Questions*

Upon completing the ADES and EDS, participants that endorsed any level of discrimination experience on one or both measures received the following feedback:

The previous pages asked about different types of discrimination you may have experienced at college due to your identity or appearance. If you experienced any of these types of discrimination, we would like to know the reason for this discrimination.

Participants were then asked to indicate whether they believed the discrimination experiences had been due to their identity or appearance across the six classifications (i.e., race/ethnicity, sexual orientation, gender identity or expression, religious affiliation, weight, disability status) on a scale ranging from 1 (I am confident this never happens to me) to 6 (This happens to me frequently).

### *Perceptions of Faculty Interactions*

Two scales were utilized to assess students' perceptions of their interactions with faculty, namely the Academic Validation scale and the General Interpersonal Validation scale (Hurtado et al., 2011, 2015). Research shows that both scales demonstrate factor validity, convergent validity, and measurement invariance across persons of color and White people (Hurtado et al., 2011, 2015). On the Academic Validation scale, participants were asked to respond to six items, such as, "Instructors encourage me to ask questions and participate in discussions," on a scale ranging from 1 (Very often) to 5 (Never). On the General Interpersonal Validation scale, participants were asked to respond to six items, such as, "Faculty empower me to learn here," on a scale ranging from 1 (Strongly agree) to 4 (Strongly disagree). All items on each scale were scored so that higher scores were indicative of greater perceptions of academic validation and general interpersonal validation. Cronbach's alphas were .85 and .86 for academic validation and general interpersonal validation, respectively.

### *Perceptions of Peer Interactions*

The 16-item Interpersonal Resilience Inventory (IRI; Rivers & Sanford, 2020) was used to assess participants' perceptions of positive and negative interactions with peers. The IRI demonstrates factor validity, discrimination across a wide range of response levels, measurement invariance, convergent validity, and predictive validity (Rivers & Sanford, 2021). Using the IRI, participants were asked to rate the perceived frequency of 16 different positive interactions (e.g., "laughed together or enjoyed humor") and negative interactions (e.g., "one of you was critical or hostile or blamed the other") with their college friends in the last month on a scale ranging from 1 (This

definitely did not happen) to 8 (This happened a few times a day). Higher scores indicated more frequent interaction. Cronbach's alphas were .87 and .89 for positive interactions and negative interactions, respectively.

### *Engagement in Academic Life*

Two scales derived from the Engagement Versus Disaffection With Learning-Student Report Questionnaire (Skinner et al., 2009) were used to assess emotional engagement and behavioral engagement among participants. Existing research shows that the Engagement Versus Disaffection With Learning- Student Report Questionnaire demonstrates internal consistency, factor validity, and convergent validity (Skinner et al., 2009). The emotional engagement scale includes five items (e.g., "When we work on something in class, I feel interested") and the behavioral engagement scale includes five items (e.g., "When I'm in class, I listen very carefully"). All items are rated on a scale ranging from 1 (Not at all true) to 4 (Very true). Higher scores on the emotional engagement scale and the behavioral engagement scale were indicative of greater engagement. Cronbach's alphas were .80 and .75 for emotional engagement and behavioral engagement, respectively.

Three scales from the Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich & DeGroot, 1990) were utilized to assess cognitive engagement, namely the Intrinsic Value, Cognitive Strategy Use, and Self-Efficacy scales. The MSLQ demonstrates internal consistency, factor validity, and convergent validity (Pintrich & DeGroot, 1990). The Intrinsic Value scale of the MSLQ includes nine items (e.g., "I prefer class work that is challenging so I can learn new things"), the Cognitive Strategy Use scale includes 13 items (e.g., "When reading I try to connect the things I am reading

about with what I already know”), and the Self-Efficacy scale includes nine items (e.g., “Compared with other students in [my] class[es] I expect to do well”). All items were rated on a scale ranging from 1 (Very untrue of me) to 7 (Very true of me), and the third item on the Cognitive Strategy Use scale (i.e., “It is hard for me to decide what the main ideas are in what I read”) was reverse scored. Higher scores were indicative of higher levels of intrinsic value, greater use of cognitive strategies, and higher perceived self-efficacy depending on the respective scale being assessed. Cronbach’s alphas were .87, .79, and .92 for intrinsic value, cognitive strategy use, and self-efficacy, respectively.

Finally, to assess academic performance via GPA, participants were asked to list the courses they took the previous semester and the grade they received in each course. This is a common way to assess GPA in college student populations (Grzegorek et al., 2004; Vuong et al., 2010). Given that the number of credits per course was not obtained, unweighted GPA was calculated.

#### *Postgraduate Educational Aspirations*

Participants were asked to respond to a single item about their intent to attend graduate school upon graduating from college (Hanson et al., 2016) to assess their postgraduate educational aspirations. Specifically, participants were asked, “What is the highest academic degree that you intend to obtain in your lifetime?”. Responses were dummy coded such that 1 = post-baccalaureate education (i.e., master’s degree, doctoral degree, professional degree) and 0 = all else (i.e., none, vocational certificate, associate degree, bachelor’s degree, other).

### *Psychological Distress*

The K6 generalized distress scale (Kessler et al., 2003) is a six-item measure that was used to assess significant distress symptoms (e.g., anxiety, depression). The scale demonstrates adequate internal consistency, test-retest reliability, convergent validity, and discriminant validity (Staples et al., 2019). Using the K6 generalized distress scale, respondents were asked to rate how often they had experienced various symptoms, such as feeling “depressed” or “restless or fidgety,” in the past 30 days on a scale ranging from 1 (All of the time) to 5 (None of the time). All items were reverse scored; therefore, higher scores were indicative of a greater tendency toward psychological distress. Cronbach’s alpha for the K6 generalized distress scale was .90.

### *Coping Strategies*

The Coping Strategies Inventory- Short Form (CSI-SF; Addison et al., 2007) is a 16-item measure comprised of two scales that assess participants’ utilization of disengagement and engagement coping strategies (one scale taps each dimension of coping strategies). The CSI-SF demonstrates internal consistency and factor validity (Addison et al., 2007; Speyer et al., 2016). Using this measure, participants were asked to respond to items, such as, “I step back from the situation and try to put things into perspective,” on a scale ranging from 1 (Never) to 5 (Almost always). Higher scores on each dimension indicated greater use of those coping strategies. Cronbach’s alphas were .71 and .75 for the disengagement and engagement dimensions, respectively.



## CHAPTER THREE

### Results

#### *Hypothesis 1*

It was hypothesized that the six ADES items would produce a good fit to a unidimensional CFA model. The CFA model was tested utilizing the “lavaan” package in R (Rosseel, 2012). The model specified that all items on the ADES loaded onto one factor. The model was further specified in a manner that did not allow item error variances to correlate, and it was tested utilizing mean- and variance-adjusted weighted least squares given the ordinal nature of the data. According to a two-index strategy for model fit (Hu & Bentler, 1999), it was expected that the Comparative Fit Index (CFI) would be greater than or equal to .95 and that the Standardized Root Mean Residual (SRMR) would be less than or equal to .08. Moreover, it was expected that the standardized factor loadings for items would exceed .55, a cutoff indicative of “good” factor loadings (Comrey & Lee, 1992). For purpose of comparison, CFA was also used to determine whether the nine EDS items produced a good fit to a unidimensional model.

The CFA model for the ADES met criteria for a good fit ( $\chi^2 (df = 9) = 40.37, p < .001, CFI = .995, RMSEA = .082, SRMR = .042$ ). In addition, all the items had good factor loadings, with standardized loadings ranging from .69 to .86; the standardized loadings for all ADES items are listed in Table 3.1. Taken together, these results support the unidimensional factor structure of the ADES.

Table 3.1

*Academia Discrimination Experience Scale (ADES) Item Standardized Loadings from CFA*

Item	Standardized CFA loadings
1. At college, how much do you trust that peers, faculty, and staff will NOT discriminate against you due to your identity or appearance? <sup>a</sup>	.78
2. Does this happen to you? At college, I am stereotyped or judged due to my identity or appearance. <sup>b</sup>	.74
3. At college, how well do peers, faculty, and staff understand people with your identity or appearance? <sup>c</sup>	.78
4. Does this happen to you? At college, I am treated as if I am inferior due to my identity or appearance. <sup>b</sup>	.82
5. At college, I feel like I am at a place that welcomes people of my identity or appearance. <sup>d</sup>	.86
6. I would receive better treatment from peers, faculty, and staff if I belonged to a group with a different identity or appearance. <sup>e</sup> (reverse scored)	.69

*Note.* CFA = confirmatory factor analysis. <sup>a</sup> Rating scale: 1 = *Completely trust that they will NOT discriminate*; 2 = *Almost completely trust*; 3 = *Mostly trust*; 4 = *Somewhat trust*; 5 = *Do NOT trust*. <sup>b</sup> Rating scale: 1 = *I am confident this never happens to me*; 2 = *I doubt this ever happens to me*; 3 = *I do not know if this happens to me*; 4 = *This happens to me, but only rarely*; 5 = *This happens to me occasionally*; 6 = *This happens to me frequently*. <sup>c</sup> Rating scale: 1 = *Perfectly understand*; 2 = *Almost perfectly understand*; 3 = *Mostly understand*; 4 = *Somewhat understand*; 5 = *Do NOT understand*. <sup>d</sup> Rating scale: 1 = *Completely true*; 2 = *Almost completely true*; 3 = *Mostly true*; 4 = *Somewhat true*; 5 = *Not true*. <sup>e</sup> Rating scale: 1 = *Completely feel this way*; 2 = *Somewhat feel this way*; 3 = *Might slightly feel this way*; 4 = *Do not feel this way*; 5 = *Definitely do not feel this way*.

For the sake of comparison, the CFA model for the EDS also met criteria for a good fit to a unidimensional model ( $\chi^2 (df = 27) = 165.63, p < .001, CFI = .996, RMSEA = .100, SRMR = .050$ ). In addition, all the items had good factor loadings, with standardized loadings ranging from .76 to .95; these standardized loadings are listed in Table 3.2. Similar to the results for the ADES, these results support the unidimensional factor structure of the EDS.

Table 3.2

*Everyday Discrimination Scale (EDS) Item Standardized Loadings from CFA*

Item	Standardized CFA loadings
1. Due to your identity or appearance, you are treated with less courtesy than other people are.	.95
2. Due to your identity or appearance, you are treated with less respect than other people are.	.94
3. Due to your identity or appearance, you receive poorer service than other people (e.g., at campus offices or dining halls).	.85
4. Due to your identity or appearance, people act as if they think you are not smart.	.76
5. Due to your identity or appearance, people act as if they are afraid of you.	.80
6. Due to your identity or appearance, people act as if they think you are dishonest.	.88
7. Due to your identity or appearance, people act as if they're better than you are.	.84
8. Due to your identity or appearance, you are called names or insulted.	.81
9. Due to your identity or appearance, you are threatened or harassed.	.77

*Note.* CFA = confirmatory factor analysis. All items use the same rating scale: 1 = *Never*; 2 = *Less than once a year*; 3 = *A few times a year*; 4 = *A few times a month*; 5 = *At least once a week*; 6 = *Almost everyday*.

It was also expected that the ADES would provide high information in IRT analyses. Specifically, IRT was utilized to determine how well each item on the ADES discriminates across a wide range of levels of discrimination experience. The analysis was performed utilizing the graded response model (Samejima, 1969) and the “Irtm” package in R (Rizopoulos, 2006). To provide a comparison, IRT analyses were conducted for the EDS.

The researcher utilized two criteria to determine whether the ADES and EDS could discriminate across a wide range of values on the latent variable (in this case, the latent variable was discrimination experience; Sanford & Rivers, 2020). The first

criterion was that discrimination values would be calculated for all items on each scale (six items on the ADES, nine items on the EDS). Discrimination values indicate how well a single item can differentiate between two respondents at different levels of the latent variable (Nguyen et al., 2014). As recommended by Baker (2001), each item on the ADES was hypothesized to demonstrate discrimination values larger than 1.7, which is a cutoff value indicative of “very high” discrimination. The second criterion was that test information curves would be plotted for both the ADES and EDS (Sanford & Rivers, 2020). Test information curves include an *x*-axis and a *y*-axis; the *x*-axis illustrates a range of “ability” levels on a latent variable in standard deviation units, and the *y*-axis illustrates how much “information” is offered by an instrument across a wide range of levels of a latent variable. When conducting IRT analysis, it is ideal for the test information curve to appear flat and wide. A curve with such properties demonstrates that an instrument has the ability to assess for a wide range of responses on a latent variable. Generally, a scale is considered to provide good discrimination if the information values exceed 5 across a range of response levels, including response levels falling more than one standard deviation above and below the mean of a latent variable (Sanford & Rivers, 2020).

Table 3.3 and Table 3.4 display discrimination values for each item on the ADES and EDS, respectively. As depicted in Table 3.3, the discrimination values for the ADES items ranged from 1.73 to 2.83, exceeding the cutoff for “very high” discrimination. Similarly, Table 3.4 shows that the discrimination values for the EDS items exceeded the same cutoff, with values ranging from 1.94 to 3.48. Furthermore, Figure 3.1 and Figure 3.2 show the test information curves for the ADES and EDS, respectively. For the ADES,

the test information curve was relatively flat and wide, and the information values specifically exceeded 5 for a minimum range of respondents scoring more than one standard deviation above and below the mean. The EDS, however, only provided good discrimination for respondents reporting high levels of discrimination experience. As can be seen in Figure 3.2, the EDS provided minimal information for respondents who scored below the mean.

Table 3.3

*Academia Discrimination Experience Scale (ADES) Item Discrimination Values from IRT Analysis*

Item	Discrimination
1. At college, how much do you trust that peers, faculty, and staff will NOT discriminate against you due to your identity or appearance? <sup>a</sup>	2.30
2. Does this happen to you? At college, I am stereotyped or judged due to my identity or appearance. <sup>b</sup>	1.83
3. At college, how well do peers, faculty, and staff understand people with your identity or appearance? <sup>c</sup>	2.29
4. Does this happen to you? At college, I am treated as if I am inferior due to my identity or appearance. <sup>b</sup>	2.43
5. At college, I feel like I am at a place that welcomes people of my identity or appearance. <sup>d</sup>	2.83
6. I would receive better treatment from peers, faculty, and staff if I belonged to a group with a different identity or appearance. <sup>e</sup> (reverse scored)	1.73

*Note.* IRT = item response theory. <sup>a</sup> Rating scale: 1 = *Completely trust that they will NOT discriminate*; 2 = *Almost completely trust*; 3 = *Mostly trust*; 4 = *Somewhat trust*; 5 = *Do NOT trust*. <sup>b</sup> Rating scale: 1 = *I am confident this never happens to me*; 2 = *I doubt this ever happens to me*; 3 = *I do not know if this happens to me*; 4 = *This happens to me, but only rarely*; 5 = *This happens to me occasionally*; 6 = *This happens to me frequently*. <sup>c</sup> Rating scale: 1 = *Perfectly understand*; 2 = *Almost perfectly understand*; 3 = *Mostly understand*; 4 = *Somewhat understand*; 5 = *Do NOT understand*. <sup>d</sup> Rating scale: 1 = *Completely true*; 2 = *Almost completely true*; 3 = *Mostly true*; 4 = *Somewhat true*; 5 = *Not true*. <sup>e</sup> Rating scale: 1 = *Completely feel this way*; 2 = *Somewhat feel this way*; 3 = *Might slightly feel this way*; 4 = *Do not feel this way*; 5 = *Definitely do not feel this way*.

Table 3.4

*Everyday Discrimination Scale (EDS) Item Discrimination Values from IRT Analysis*

Item	Discrimination
1. Due to your identity or appearance, you are treated with less courtesy than other people are.	3.48
2. Due to your identity or appearance, you are treated with less respect than other people are.	3.15
3. Due to your identity or appearance, you receive poorer service than other people (e.g., at campus offices or dining halls).	3.29
4. Due to your identity or appearance, people act as if they think you are not smart.	2.00
5. Due to your identity or appearance, people act as if they are afraid of you.	2.13
6. Due to your identity or appearance, people act as if they think you are dishonest.	2.47
7. Due to your identity or appearance, people act as if they're better than you are.	2.91
8. Due to your identity or appearance, you are called names or insulted.	2.23
9. Due to your identity or appearance, you are threatened or harassed.	1.94

*Note.* IRT = item response theory. All items use the same rating scale: 1 = *Never*; 2 = *Less than once a year*; 3 = *A few times a year*; 4 = *A few times a month*; 5 = *At least once a week*; 6 = *Almost everyday*.

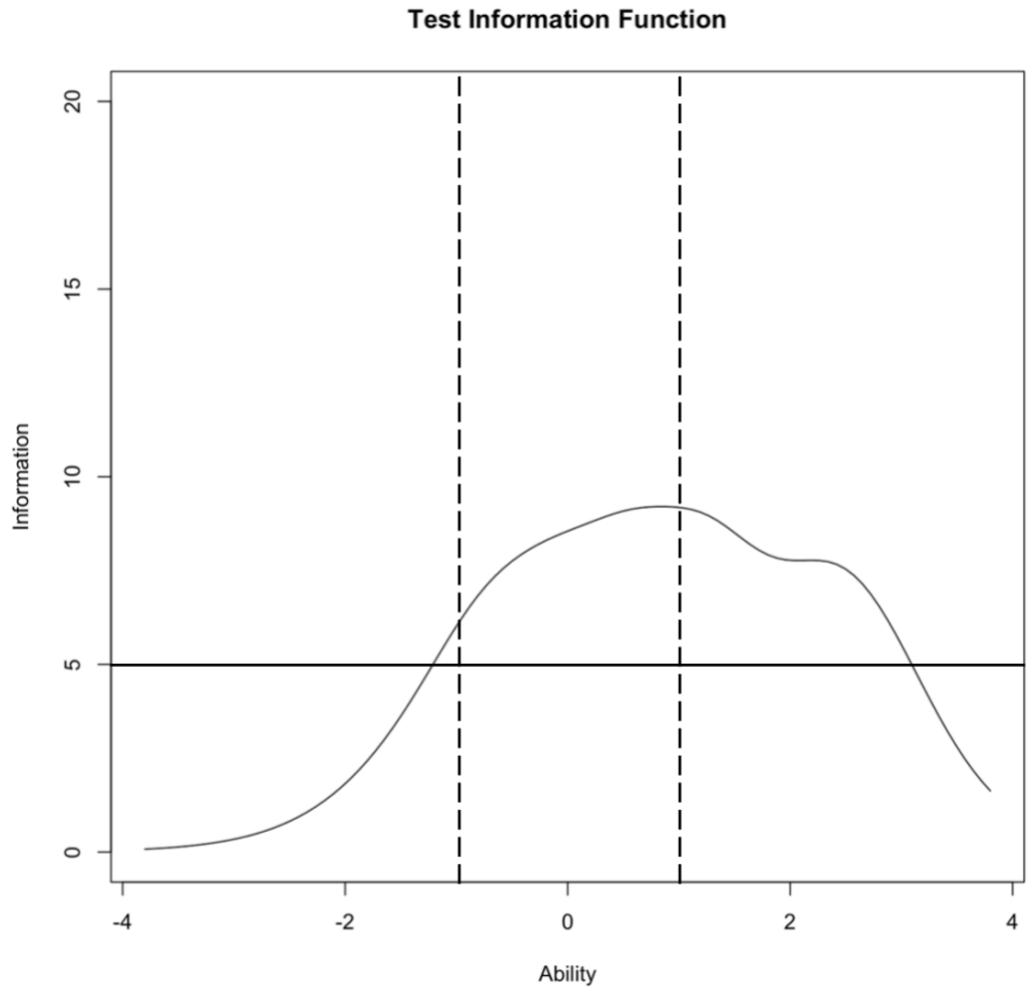


Figure 3.1. Test information curve for the Academia Discrimination Experience Scale (ADES). Note. The solid line indicates information values at 5, and the two dotted lines show scores plus or minus 1 standard deviation from the mean.

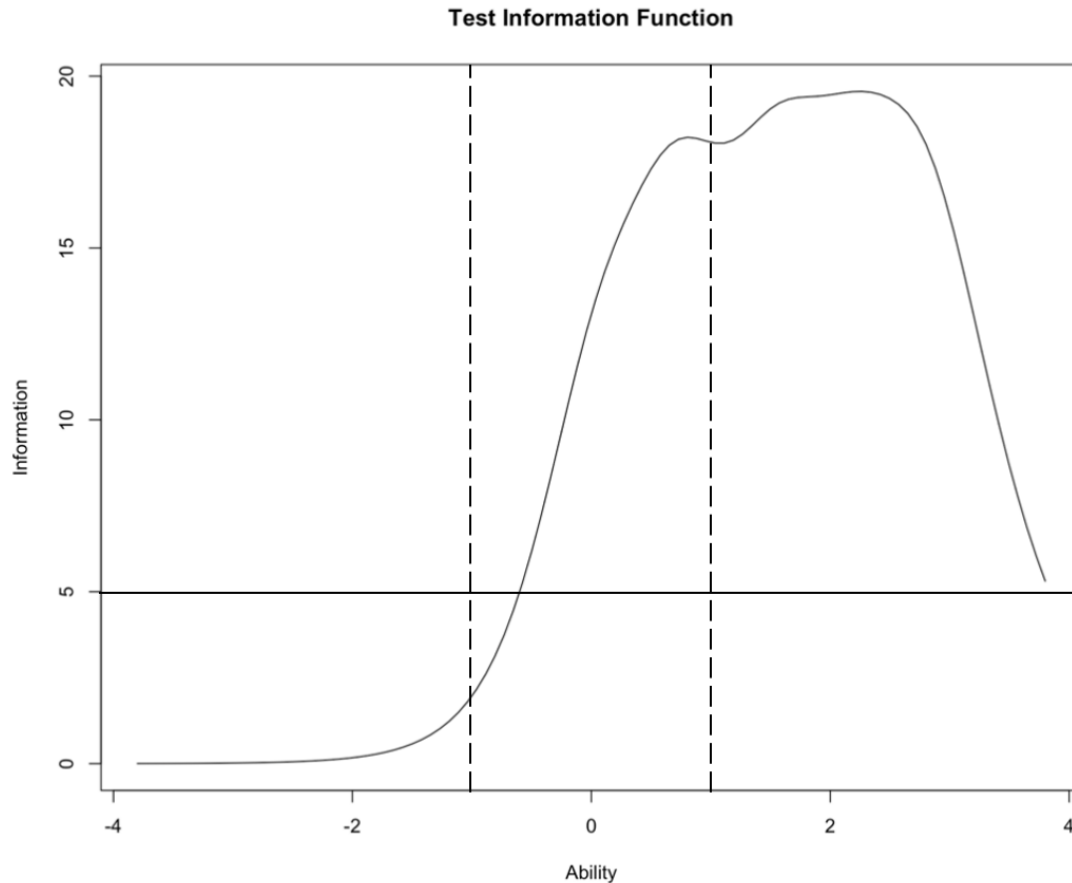


Figure 3.2. Test information curve for the Everyday Discrimination Scale (EDS). *Note.* The solid line indicates information values at 5, and the two dotted lines show scores plus or minus 1 standard deviation from the mean.

Overall, these results suggest that the ADES demonstrates good discrimination across a wide range of discrimination experience levels in IRT analyses; however, the EDS suffers some problems related to item discrimination.

### *Hypothesis 2*

It was hypothesized that the ADES would demonstrate convergent correlations with outcomes that are associated with experienced discrimination among an undergraduate population, namely interactions with faculty, interactions with peers,



engagement in academic life, postgraduate educational aspirations, psychological distress, and coping strategies. Further, it was expected that the ADES would produce significantly stronger correlations with each criterion variable than would the EDS. To test this hypothesis, correlation was used to examine the bivariate associations between variables, and Steiger's *t*-test (Steiger, 1980) was used to test for differences between correlations. It was also hypothesized that the ADES would produce significantly larger standardized beta weights than would the EDS. To conduct this analysis, the first step was to run a series of regression equations using structural equation modeling in which scores on the ADES and EDS predicted each criterion variable. The second step was to estimate regression models in which the absolute values of standardized betas were constrained to be equal using the "lavaan" package in R. The chi-square statistic was used to test for differences in standardized beta weights, and this was a more stringent test than testing for differences between correlations. Indeed, testing for differences in correlations is simply testing whether one variable produces a significantly larger correlation than another variable. Testing for differences in beta weights, however, assesses whether a variable produces an effect that is both significantly larger and unique.

The correlations between the ADES and the criterion variables are reported in Table 3.5. Overall, 14 convergent correlations were hypothesized; nine of these correlations were significant and five were nonsignificant. Specifically, the ADES did not correlate with the intrinsic value, cognitive strategy use, engagement coping strategies, postgraduate educational aspirations, and unweighted GPA variables. Of the significant correlations, a few were considered moderate (the ADES correlated  $-.30$  with academic validation,  $-.31$  with general interpersonal validation, and  $.31$  with psychological

distress); the six remaining correlations fell in the small range, with coefficients ranging from  $-.10$  to  $.21$ . Overall, the ADES did not correlate with all the criterion variables as hypothesized, and thus, it failed to meet this criterion.

Table 3.5 also provides the correlations between the EDS and criterion variables. As shown in the table, 11 correlations were significant and three were nonsignificant. Like the ADES, the EDS did not correlate with the engagement coping strategies or unweighted GPA variables. The EDS also did not correlate with the positive peer interactions variable, although this correlation was significant for the ADES. For the correlations that were significant, only one was considered moderate (the EDS correlated  $.32$  with negative peer interactions), nine correlations were considered small, and one was considered trivial.

All things considered, both the ADES and EDS did not correlate with all the criterion variables, and most effects that were significant fell in the small range.

Table 3.5

*Correlations with Criterion Variables and Tests for Differences Between Correlations*

Criterion variable	ADES correlations	EDS correlations	<i>t</i> -values testing differences between correlations
Academic validation	-.30**	-.26**	1.21
General interpersonal validation	-.31**	-.21**	3.03**
Positive peer interactions	-.10*	-.08	.58
Negative peer interactions	.21**	.32**	-3.34***
Emotional engagement	-.17**	-.17**	.00
Behavioral engagement	-.14**	-.15**	-.29
Intrinsic value	-.09	-.12**	-.87
Cognitive strategy use	-.07	-.16**	-2.63**
Self-efficacy	-.14**	-.20**	-1.76
Psychological distress	.31**	.28**	.91
Engagement coping	-.08	-.07	.29
Disengagement coping	.13**	.10*	.87
Postgraduate educational aspirations	-.02	-.09*	-2.03*
Unweighted GPA	-.07	-.07	.00

Note. \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Steiger's *t*-test (Steiger, 1980) was used to determine whether the correlations between the ADES and criterion variables significantly differed from the correlations between the EDS and criterion variables; Table 3.5 provides the results of these *t*-tests. Contrary to hypotheses, the ADES only produced one larger correlation compared to the EDS. Specifically, there was a significant difference between the ADES and EDS in the magnitude of difference between their correlations with general interpersonal validation (difference in correlations = .10,  $t(515) = 3.03$ ,  $p < .01$ ), with the ADES having the larger correlation. Unexpectedly, the EDS produced three significantly larger correlations than did the ADES. First, there was a significant difference between the ADES and EDS in the magnitude of difference between their correlations with negative peer interactions (difference in correlations = .11,  $t(515) = 3.34$ ,  $p < .001$ ), with the EDS having the larger

correlation. Second, there was a significant difference between the ADES and EDS in the magnitude of difference between their correlations with cognitive strategy use (difference in correlations = .09,  $t(515) = 2.63, p < .01$ ), with the EDS having the larger correlation. Third, there was a significant difference between the ADES and EDS in the magnitude of difference between their correlations with postgraduate educational aspirations (difference in correlations = .07,  $t(515) = 2.03, p < .05$ ), with the EDS having the larger correlation.

To test whether the ADES produced significantly larger standardized beta weights than did the EDS, a series of regression equations was estimated to determine whether scores on the ADES and EDS predicted each criterion variable. Thus, the ADES and EDS were both entered as predictors in the model, with each criterion variable entered as an outcome variable. Table 3.6 lists standardized beta weights, which indicate the extent to which a predictor variable explains unique variance in an outcome after controlling for the variance of the other predictors in the equation.

Table 3.6

*Standardized Betas from Regression Equations Testing Incremental Convergent Validity*

Criterion variable	ADES standardized beta	EDS standardized beta
Academic validation	-.23***	-.10
General interpersonal validation	-.32***	.01
Positive peer interactions	-.09	-.01
Negative peer interactions	-.02	.33***
Emotional engagement	-.11	-.09
Behavioral engagement	-.07	-.10
Intrinsic value	.00	-.12*
Cognitive strategy use	.08	-.21***
Self-efficacy	-.01	-.19**
Psychological distress	.23***	.12*
Engagement coping	-.07	-.02
Disengagement coping	.12	.02
Postgraduate educational aspirations	.09	-.15*
Unweighted GPA	-.04	-.04

Note. \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

After controlling for the EDS, the ADES explained unique variance in three criterion variables. First, when predicting academic validation, the ADES had a standardized beta of  $-.23$  ( $p < .001$ ), and the EDS had a nonsignificant standardized beta ( $p = .096$ ). Second, when predicting general interpersonal validation, the ADES had a standardized beta of  $-.32$  ( $p < .001$ ), and the EDS had a nonsignificant standardized beta ( $p = .873$ ). Third, when predicting psychological distress, the ADES had a standardized beta of  $.23$  ( $p < .001$ ), and the EDS had a standardized beta of  $.12$  ( $p < .05$ ). This means that the ADES and EDS explained unique variance in psychological distress after controlling for the effects of each other.

In addition to the psychological distress variable, the EDS explained unique variance in negative peer interactions, intrinsic value, cognitive strategy use, self-

efficacy, and postgraduate educational aspirations after controlling for the effects of the ADES. Table 3.6 provides these standardized beta values.

To test for differences between standardized betas, their absolute values were constrained to be equal. This allowed for the formation of a series of models in which each model had one degree of freedom and an imperfect fit. A test of fit was utilized because, if the model fit was imperfect to a statistically significant degree, then that would mean the constraint worsened the model fit (i.e., the two betas would be significantly different from each other). The ADES produced a significantly larger standardized beta than the EDS when predicting one criterion variable. Indeed, for the equation predicting general interpersonal validation, the constrained model produced a significantly poor fit, indicating a significant difference between the absolute standardized betas for the ADES and EDS,  $\chi^2(1, N = 518) = 43.76, p < .001$ . This result is consistent with the earlier reported result regarding a difference between correlations. The EDS produced significantly larger standardized betas than did the ADES when predicting negative peer interactions ( $\chi^2[1, N = 518] = 44.74, p < .001$ ) and cognitive strategy use ( $\chi^2[1, N = 518] = 7.61, p < .01$ ). These results are consistent with the previously reported results regarding a difference between correlations for these two variables. None of the remaining constrained models produced significantly poor fits.

### *Hypothesis 3*

Hypothesis 3 involves analyses testing group differences between (a) target groups with well-documented experiences of discrimination and (b) nontarget groups. The target groups included participants who either identified as a person of color and/or a LGBTQ+ person, and the nontarget groups included all other participants. Specifically,

the nontarget groups included any participant who was neither a person of color nor a LGBTQ+ person irrespective of whether they identified with other minority statuses. A participant could belong to the nontarget groups, for example, if they identified as a person with a disability or if they did not identify with any minority classification assessed. Roughly half the sample (50.4%;  $N = 261$  participants) included individuals from one or both target groups, while almost half of the sample (49.6%;  $N = 257$ ) included participants from the nontarget groups.

For Hypothesis 3, it was expected that there would be a significant difference between target groups and nontarget groups in their report of discrimination experience on the ADES. A simple contrast was used to test for this difference, with a  $d$ -statistic calculated as the effect size. Overall, there was a large and significant difference between target groups and nontarget groups ( $d = .93$ ,  $t(482) = 10.59$ ,  $p < .001$ ) in their report of discrimination experience such that individuals from the target groups reported higher levels of discrimination experience ( $M = 16.97$ ,  $SD = 5.84$ ) than did individuals from the nontarget groups ( $M = 12.18$ ,  $SD = 4.38$ ).

Further, it was expected that the ADES would reveal a significantly smaller percent of individuals from the target groups scoring at the scale floor (i.e., endorsing zero discrimination experiences) than the nontarget groups. In this regard, it was expected that a visual inspection of histograms would reveal that ADES scores for the target groups would more closely approximate a normal, bell-shaped curve compared to scores for the nontarget groups.

Histograms and descriptive statistics for ADES scores for the target and nontarget groups are displayed in Figure 3.3 and Figure 3.4, respectively. Upon visually examining

the histograms, ADES scores for the target groups (Figure 3.3) came closer to approximating a normal, bell-shaped curve when compared to scores for the nontarget groups (Figure 3.4). Further, on the ADES, only .8% of individuals in the target groups scored at the scale floor; this is a significantly smaller percentage of individuals than is the number of individuals in the nontarget groups who scored at the scale floor (7.8%,  $\chi^2$  ( $df = 1$ ) = 18.24,  $p < .001$ ).

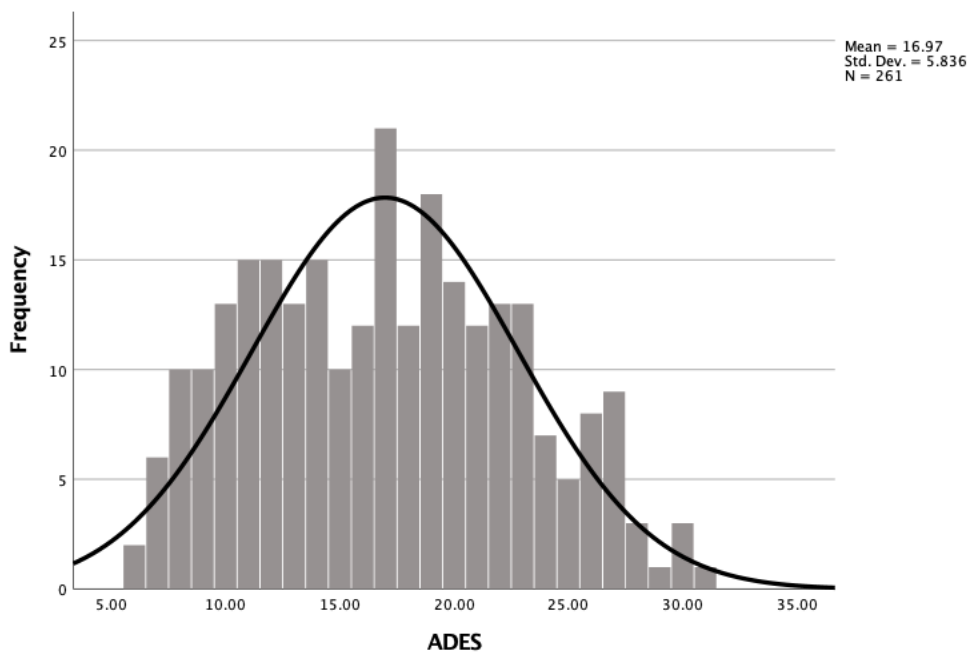
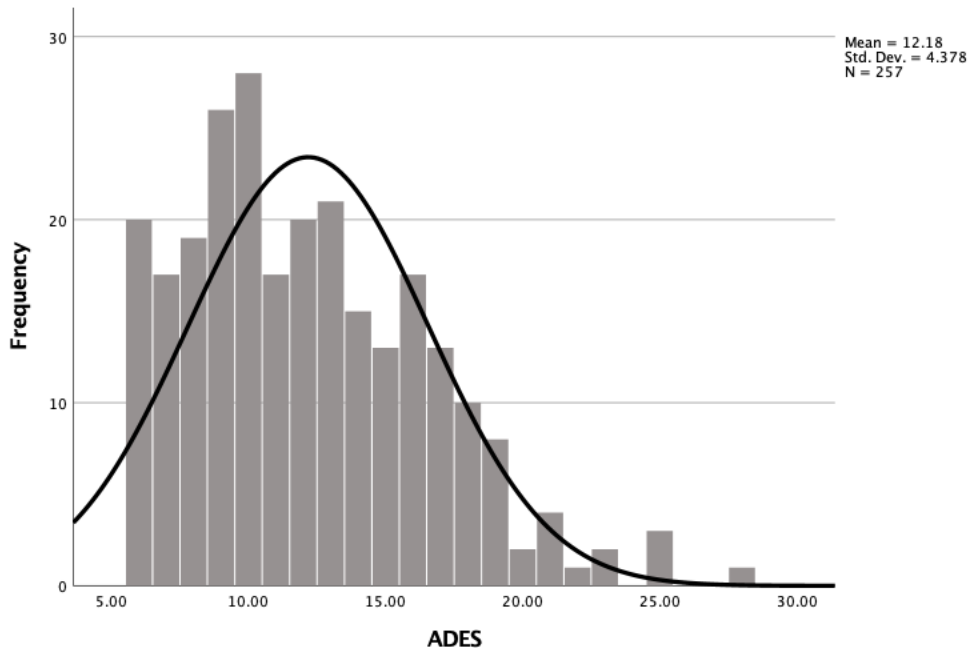


Figure 3.3. Academia Discrimination Experience Scale (ADES) scores for the target groups.





*Figure 3.4.* Academia Discrimination Experience Scale (ADES) scores for the nontarget groups.

Additionally, it was hypothesized that ADES scores for the target groups would come closer to approximating a normal curve when compared to EDS scores for the target groups. Histograms and descriptive statistics for EDS scores for the target groups are displayed in Figure 3.5. Upon a visual inspection of the histograms, ADES scores for the target groups (Figure 3.3) more closely approximate a normal, bell-shaped curve than do EDS scores for the target groups (Figure 3.5). On the EDS, 19.9% of individuals in the target groups scored at the scale floor; this is a significantly larger percentage of individuals than is the number of individuals in the target groups who scored at the floor of the ADES ( $\chi^2 (df = 1) = 60.04, p < .001$ ).

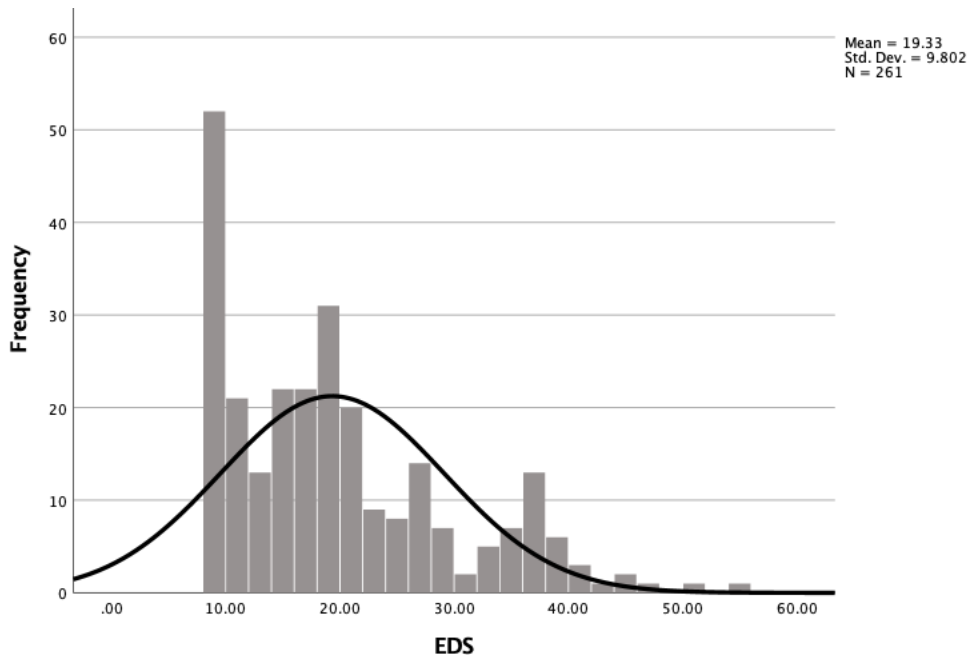


Figure 3.5. Everyday Discrimination Scale (EDS) scores for the target groups.

### *Exploratory Follow-up Analysis*

Although an important validation criterion is that the ADES should detect especially high levels of discrimination experience in groups with well-documented experiences of discrimination, discrimination can also occur based on multiple aspects of identity and appearance. As it stands, the extant literature is not sufficient to produce clear hypotheses about the dimensions of identity and appearance (other than race/ethnicity and sexual orientation) that are most important. In this regard, it is valuable to conduct an exploratory analysis to clarify the extent to which each dimension of identity and appearance (i.e., race/ethnicity, sexual orientation, gender identity or expression, disability status, religious affiliation, weight) is associated with discrimination experience. Note that, although weight perception was assessed in the present study, a participant's BMI (calculated using responses on variables measuring

height and weight) was utilized to categorize participants into the overweight or nonoverweight group. Participants with BMIs greater than or equal to 25 were categorized into the overweight group, as such a classification is consistent with the weight categorization system used in medical settings to date (Nuttall, 2015).

Two exploratory analyses testing group differences across all the dimensions assessed in this study were conducted. The first analysis involved testing a series of simple contrasts, with an effect size (*d*-statistic) calculated for each group contrast. A second analysis was conducted whereby all contrasts were entered as predictors in a regression equation, and the betas produced were effects analogous to *d*-statistics. Although the regression analysis tests the same associations as the series of simple contrasts, it specifically calculates *unique* effects for each group after controlling for the effects of all the other groups.

Table 3.7 includes the results of the simple contrasts conducted using scores on the ADES. As can be seen in Table 3.7, there was a large and significant difference between persons of color and White people ( $d = .80, t(449) = 8.93, p < .001$ ) in their report of discrimination experience such that persons of color reported higher levels of discrimination experience ( $M = 16.92, SD = 5.84$ ) than did White people ( $M = 12.68, SD = 4.79$ ). Similarly, there was a large, significant difference between LGBTQ+ persons and heterosexual individuals ( $d = .93, t(516) = 6.49, p < .001$ ), with LGBTQ+ persons reporting more discrimination ( $M = 19.13, SD = 6.24$ ) than heterosexual individuals ( $M = 14.06, SD = 5.38$ ). All other group differences were either moderate, small, or nonsignificant. For instance, there was a medium, significant difference between religious minorities and nonreligious minorities ( $d = .72, t(516) = 2.03, p < .05$ ), with

religious minorities reporting higher levels of discrimination ( $M = 18.63$ ,  $SD = 3.54$ ) than nonreligious minorities ( $M = 14.53$ ,  $SD = 5.70$ ). There was a small, significant difference between persons with a disability and persons without a disability ( $d = .27$ ,  $t(516) = 2.39$ ,  $p < .05$ ) such that persons with a disability endorsed more discrimination ( $M = 15.83$ ,  $SD = 5.74$ ) than did persons without a disability ( $M = 14.31$ ,  $SD = 5.65$ ). The remaining group differences were nonsignificant for the ADES. Upon considering the size of group differences that emerged, this analysis clearly justifies defining the target groups to include only persons of color and LGBTQ+ persons, with the nontarget groups including all other participants.

Table 3.7

*Betas from a Regression Equation and d-statistics from Simple Contrasts for the Academia Discrimination Experience Scale (ADES)*

Group classifications	Beta <sup>a</sup>	<i>d</i> -statistic
Person of color <sup>b</sup>	.75***	.80***
LGBTQ+ person <sup>c</sup>	.81***	.93***
Female <sup>d</sup>	.09	.02
Person with a disability <sup>e</sup>	.31**	.27*
Religious minority <sup>f</sup>	.44	.72*
Overweight person <sup>g</sup>	.12	.16

*Note.* \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ . <sup>a</sup> All six group classifications (i.e., person of color, LGBTQ+ person, female, person with a disability, religious minority, overweight person [according to the Body Mass Index or BMI classification]) were dummy coded such that 0 = “not a member of that group” and 1 = “member of that group,” and discrimination experience as measured by the ADES was converted to a *z*-score. As such, the betas reported are effects analogous to *d*-statistics. <sup>b</sup> Compared persons of color (Asian American, Black or African American, American Indian or Native American, Hispanic or Latino(a), Pacific Islander or Native Hawaiian, having a race/ethnicity not on the list) with White (non-Hispanic) people. <sup>c</sup> Compared LGBTQ+ persons (asexual, bisexual, gay, lesbian, pansexual, queer, having a sexual orientation not on the list) with heterosexual/straight persons. <sup>d</sup> Compared females (cisgender female, transgender female) with nonfemales (cisgender male, transgender male, nonbinary, genderqueer/gender nonconforming, having a gender identity not on the list). <sup>e</sup> Compared persons with a disability (having a learning disability [e.g., dyslexia], having a psychological disorder [e.g., depression, PTSD, ADHD, autism spectrum disorder], having a physical or sensory disability [e.g., speech, sight, mobility, hearing], having a chronic illness [e.g., cancer, diabetes, autoimmune disorders], and/or having a disability not listed) with persons without a disability. <sup>f</sup> Compared religious minorities (Jewish, Muslim) with nonreligious minorities (agnostic, atheist, Buddhist, Christian, Hindu, Sikh, having a religious preference not on the list). This variable was categorized in this way due to literature showing that individuals identifying as Jewish or Muslim experience a clear lack of privilege in the United States today (Scheitle & Ecklund, 2020). The religious minority group consisted of 8 participants total, all of whom identified as Muslim. <sup>g</sup> Compared overweight persons (participants with a BMI greater than or equal to 25.00) with nonoverweight persons (participants with a BMI less than or equal to 24.99). Such a categorization is consistent with practice in medical settings to date (Nuttall, 2015). To calculate BMI, participants were asked to provide their height and weight. Participants were also asked to describe their weight using one of the following response options: Very underweight, slightly underweight, about the right weight, slightly overweight, very overweight.

In regression analysis, discrimination experience as measured by the ADES was predicted using participants' group membership. In this analysis, all six group classifications (i.e., person of color, female, LGBTQ+ person, religious minority, overweight person [according to the BMI classification], person with a disability) were entered into a regression equation. The group classifications were dummy coded such that 0 = "not a member of that group" and 1 = "member of that group," and discrimination experience as measured by the ADES was converted to a z-score. As such, the betas reported are effects analogous to *d*-statistics.

Table 3.7 includes the results of the regression analysis when predicting scores on the ADES. The six predictors explained a significant portion of variance in discrimination experience as measured by the ADES ( $R^2 = .23$ ,  $F(6, 511) = 25.10$ ,  $p < .001$ ). Race/ethnicity, sexual orientation, and disability status each explained unique variance in discrimination experience after controlling for the effects of the other variables in the equation. None of the other group classifications explained unique variance in ADES scores after controlling for the other variables.

## CHAPTER FOUR

### Discussion

The results of the present study were both consistent and inconsistent with the proposed hypotheses. Expectedly, the ADES, which uses a broad set of indicators to measure experienced discrimination among college students, demonstrated a unidimensional factor structure and provided good discrimination across a wide range of discrimination experience levels. In addition, there was a large, significant difference between the target groups with well-documented experiences of discrimination (i.e., persons of color, sexual minorities) and the nontarget groups (i.e., people who do not identify as a person of color or sexual minority) in their scores on the ADES, with target groups endorsing more discrimination. Further, ADES scores for the target groups more closely approximated a normal, bell-shaped curve compared to ADES scores for the nontarget groups, and ADES scores for the target groups came closer to approximating a normal curve relative to EDS scores for the target groups. Unexpectedly, the ADES failed to meet the criterion for convergent validity. Indeed, the scale did not correlate with the intrinsic value, cognitive strategy use, postgraduate educational aspirations, unweighted GPA, and engagement coping strategies variables. Given the lack of expected convergent effects, comparisons between the ADES and EDS in effect sizes became somewhat moot, and these results were largely inconclusive in any case. For instance, most of the differences were nonsignificant, the few that were significant were small, and several were not in the hypothesized direction.

The results of this study both support and build upon extant lines of research investigating the factor structure of discrimination experience measures. For instance, in the present study, the EDS demonstrated a unidimensional factor structure, which is consistent with several previous studies (Bernstein et al., 2011; Clark et al., 2004; Lewis et al., 2012; Reeve et al., 2011; Shariff-Marco et al., 2011). The results build upon extant lines of research, as the findings suggest it is meaningful and valid to conceptualize a wider range of indicators of discrimination experience (as assessed on the ADES) as a unidimensional construct. Therefore, it can be concluded that discrimination experience faced by college students not only includes the perception that others engage in negative behaviors toward the self (as assessed on the EDS; Williams et al., 1997), but it also includes perceptions that individuals endorse negative beliefs about oneself, that there is a high likelihood one will not be treated fairly, and that the undergraduate institution devalues one's own group and/or endorses policies that promote disparities. Such a conceptualization is consistent with how discrimination experience can be defined in healthcare settings (Sanford & Pizzuto, 2022), and it further supports existing literature examining the influence of stigma consciousness (Pinel, 1999), beliefs about a particular "ism" (e.g., beliefs about sexism; Glick & Fiske, 1999), and systemic forms of discrimination or "isms" (e.g., systemic racism; Feagin, 2006). In addition, since the ADES captures a broader set of indicators of discrimination experience than does the EDS, and since it uses only six items (while the EDS uses nine items), it can be concluded that the ADES maximizes content validity and parsimony relative to the EDS. This highlights the potential for the ADES to be used in academic research without placing significant burden on respondents.



The results of this study are consistent with and build upon existing research examining the sensitivity of measures to detect discrimination experience and to detect group differences among undergraduates. When the EDS, for example, has been used to assess discrimination experience among college students, it often produces a relatively high number of people from marginalized groups reporting zero discrimination. For instance, results from Chen and colleagues (2014) demonstrate that 23.1% of university students identifying as Asian American or Pacific Islander report zero discrimination experiences on the EDS, and the percentage of participants endorsing “never” on each item ranged from 38.3% to 79.6%. Recent data from Hua and colleagues (2022) show that approximately 28% (Study 1) and 30% (Study 2) of participants attending a Hispanic-Serving Institution did not report any discrimination experiences on a shortened version of the EDS. Although these studies included both students of color and White students, only 10.7% and 7.7% of the total samples in Studies 1 and 2, respectively, identified as White. In addition, Lanaway and Burlew (2021) implemented chronicity-based coding to differentiate between items tapping “subtle” and “blatant” forms of discrimination on the EDS among a sample of Black or African American college students. These researchers found that 10% and 59% of participants did not endorse any items tapping “subtle” and “blatant” forms of discrimination, respectively. The present study is consistent with this line of research, as 19.9% of participants in the target groups with well-documented experiences of discrimination (i.e., persons of color, sexual minorities) reported zero discrimination on the EDS. Thus, among people in the target groups, an unrealistic number of people appear to be reporting no discrimination at all on the EDS. Indeed, while the EDS provided good discrimination for respondents reporting

high levels of discrimination experience, it provided minimal information for respondents who scored below the mean in IRT analyses. These results suggest that for respondents who may be experiencing forms of discrimination that are less severe than “extreme,” the EDS does not distinguish well between moderate, low, and zero levels of discrimination. Notably, the present study builds upon this line of research, as a novel measure assessing a broader set of indicators of discrimination experience (i.e., the ADES) revealed only .8% of participants from the target groups endorsing zero discrimination. Most of the respondents who reported no discrimination on the EDS were endorsing low or moderate discrimination experiences on the ADES. These results suggest that the ADES is sensitive to detecting discrimination experience levels ranging from zero, low, and moderate all the way to more extreme or severe forms. Finally, the sensitivity of the ADES to detect discrimination experience likely maximized its sensitivity to detecting group differences between the target and nontarget groups. This contrasts some existing research utilizing the EDS as the measure of discrimination experience. For example, significant group differences in EDS scores were not found between Hispanic-identifying heterosexual college students and Hispanic-identifying sexual minority college students (Serpas, 2023).

The results of this study further shed light on the extent to which membership in different groups is associated with discrimination experience. Indeed, the two largest effects for group differences in levels of discrimination experience pertained to race/ethnicity and sexual orientation, and these two dimensions of identity and appearance also emerged as robust, unique predictors of discrimination experience. These findings are supported by the extant literature, as persons of color and sexual minorities

are two groups with the most widely documented evidence of discrimination experience. Therefore, the findings in the present study continue to underscore the importance of assessing race/ethnicity and sexual orientation in the investigation of experienced discrimination. Notably, the present study sheds light on the importance of assessing another aspect of one's identity, particularly disability status. Indeed, disability status emerged as a unique predictor of discrimination experience once the researcher controlled for the effects of all other identity and appearance variables. This finding provides a framework with which future researchers can make more clear hypotheses about the relationship between disability status and experienced discrimination, and it adds to extant lines of research exploring the impact of disability status on college student experiences and outcomes (Becker et al., 2002; Belch, 2011; Houck et al., 1992; Lyman et al., 2016; Sniatecki et al., 2015; West et al., 1993).

Although the ADES demonstrated several strengths, a key limitation of the scale was its failure to demonstrate convergent correlations with all the criterion variables, particularly those tapping aspects of educational experience, shedding light on existing research in this domain and highlighting possible directions for future research. For instance, the literature presented in the Introduction included samples consisting of international students (Karuppana & Barari, 2010), students attending university in China (Zhu et al., 2019), and students attending college at the height of the COVID-19 pandemic (Inman et al., 2021). There is reason to suspect that such samples of students have unique experiences pertaining to academic engagement compared to their counterparts (Wester et al., 2021; Zhao et al., 2005). In addition, it is noteworthy that a substantial portion of the research on student engagement in academic life appears to be

conducted with noncollege students (e.g., Dotterer et al., 2009; Okagaki et al., 1996; Smalls et al., 2007; Taylor et al., 1994). This may be, in part, because college students are a selective sample of students such that most are likely already engaged academically (otherwise they would not be in college). Thus, it is possible that effects are more consistently found or are larger in noncollege students. Notably, there is some evidence in the literature suggesting that discrimination experience is not related to certain academic outcomes among certain undergraduate groups. For instance, recent results from Castro and colleagues (2022) suggest that discrimination experience is not associated with GPA among Latinx students at two time intervals (i.e., final year in high school, first semester in college). In addition, findings from Hall and colleagues (2017) highlight that certain variables may influence the relationship between discrimination experience and academic outcomes. Specifically, Hall and colleagues found that, among an incoming cohort of racial/ethnic minority undergraduates, discrimination experience did not predict intent to pursue studies in STEM among students with culturally diverse friend groups. Research on academic persistence and resilience factors demonstrated by college students may further clarify this issue (Browning et al., 2018). Overall, these findings, plus the results of the present study, underscore the possibility that discrimination experience does not have to be defined as a variable that is associated with certain academic outcomes. This possibility further underscores the need for another study testing a scale with new convergent validity criteria. It could be especially promising to use the ADES, because this scale did demonstrate good factor validity, high discrimination across a range of response levels, and good sensitivity to detecting group differences. These positive features suggest it is likely that the scale could demonstrate

adequate validity, if the criteria for convergent validity are revised and another study is conducted.

The current literature provides suggestions for the correlations that need to be tested to demonstrate that the ADES is assessing the intended construct. There is a large, robust body of research demonstrating the relationship between experienced discrimination and negative mental health and physical health outcomes among college students (Del Toro & Hughes, 2020), particularly students identifying as a person of color or LGBTQ+. Although psychological distress was assessed in the present study as a singular construct, the extant literature provides evidence that it is important to assess specific aspects of psychological distress. For example, the literature consistently shows that experienced discrimination is related to increased symptoms of anxiety and depression (including suicidal ideation; Cokley et al., 2017; Donovan et al., 2013; Hollingsworth et al., 2017), higher levels of negative affectivity (Nadal et al., 2014), and greater endorsement of problems pertaining to alcohol use (Hatzenbuehler et al., 2011). The moderate correlation found in the present study between psychological distress and scores on the ADES suggests that the ADES would likely correlate with these specific dimensions of mental health outcomes among college students. In addition, discrimination faced by college students is associated with aspects of poor physical health, such as sleep disturbances (Cech & Rothwell, 2018; Fuller-Rowell et al., 2017) and negative cardiovascular outcomes pertaining to ambulatory blood pressure and heart rate variability (Hill et al., 2007; Williams, Pandya, et al., 2019). Given the robustness of this literature, it would be crucial for the ADES to demonstrate convergent correlations with such outcomes.

### *Limitations*

It is important to acknowledge limitations of the present study. Such limitations pertain to three key areas, namely (a) the generalizability of results, (b) the utilization of self-report measures, and (c) the utilization of a concurrent, correlational design. First, the study was conducted at a large, private, Baptist university in the Southern region of the United States. This may influence the generalizability of results to students attending public, secular colleges or universities in other geographic regions, as student demographics may differ. For instance, approximately 50% of all undergraduates attending a U.S. college or university during fall 2020 identified as White (National Center for Education Statistics, 2022). In contrast, at the university where the present study was conducted, approximately 60% of the undergraduate students identified as White during fall 2020 (Office of Institutional Research, 2021). In addition, the setting in which the study was conducted (i.e., at a Baptist university) may explain why there was a smaller sample of religious minorities relative to nonreligious minorities, limiting the conclusions that can be made about the experiences of individuals in the former group. Nevertheless, some data show that approximately 1% and 3% of college graduates identify as Muslim and Jewish, respectively (Pew Research Center, n.d.). Therefore, most colleges, on average, likely include small samples of students with these religious identities. Second, the present study only utilized self-report measures to gather data. Generally, such measures are considered adequate for use with college students (Pike, 1995, 1996, 1999, 2011); however, some researchers still doubt whether it is valid to use self-report instruments in this context (Pike, 2011). As such, there is a need to validate the ADES by showing it is related to objectively assessed outcomes beyond self report.

Outcomes that pertain to one's physical functioning (e.g., sleep, cardiovascular health) may serve as a useful starting point. Third, the present study utilized a concurrent, correlational study design, precluding the researcher from drawing conclusions about any types of temporal effects or cause and effect relationships. Nevertheless, it would be important to validate the ADES by demonstrating such effects, as research shows that discrimination experience negatively impacts health outcomes across time (e.g., Pavalko et al., 2003).

### *Future Directions*

It is important to propose future directions for research. As noted above, there is a clear need for another study testing the ADES with new criteria for convergent validity, particularly variables tapping mental and physical health outcomes. If the ADES does demonstrate convergent validity, it would be important to test for incremental validity to establish whether the scale produces significantly stronger correlations and significantly larger standardized beta weights than the EDS. This research would enhance our ability to make determinations about the utility of the ADES in the assessment of experienced discrimination. Assuming the ADES shows evidence of validity, another important area of research would be to determine whether the scale predicts college student outcomes across various timepoints. Indeed, there is evidence, for example, suggesting that discrimination experiences in adolescence contribute to heightened risk for substance use in early adulthood, and eventually, poorer health outcomes later in life (Yang et al., 2019). Still, few longitudinal studies have explored the temporal influence of discrimination on students of color (Del Toro & Hughes, 2020) and LGBTQ+-identifying students (Hong et al., 2016). If the ADES demonstrates the ability to predict longitudinal

outcomes, it could serve as a brief, valid, and sensitive instrument in the identification of college students at risk for facing discrimination, and thus, poorer outcomes across the lifespan.

### *Conclusion*

In sum, the present study demonstrates that the ADES, a recently developed scale, demonstrates promise for measuring experienced discrimination based on identity and appearance among college students. As hypothesized, the ADES demonstrated good factor validity, provided high information across a wide range of response levels (including low-level discrimination experience), and demonstrated good sensitivity to detecting group differences. These results are especially noteworthy upon considering the findings showing that the EDS (Williams et al., 1997), a commonly used measure of experienced discrimination, demonstrated poor sensitivity to detecting less extreme levels of discrimination experience. Unexpectedly, the ADES did not meet the criterion for convergent validity (the EDS also did not correlate with all the criterion variables). Still, the strengths of the ADES suggest that it would be promising to conduct future research with this scale to test new convergent validity criteria. This would be a meaningful pursuit, as investigating experienced discrimination with a psychometrically sound measure can aid researchers and college faculty and staff in developing a richer understanding of student wellbeing and functioning.



## APPENDICES

## APPENDIX A

### Supplemental Analyses

#### *Descriptive Statistics for Discrimination Experience Follow-up Questions*

The first supplemental analysis involved calculating descriptive statistics (means and standard deviations) to determine which identity or appearance variables participants endorsed as being the cause of their discrimination experience. It is important to note that these follow-up questions were asked immediately after participants had completed the ADES and EDS, only if they endorsed some level of discrimination experience on one or both measures. There were 17 participants who did not endorse any discrimination experience, and thus, they were excluded from this analysis. In addition, it is reasonable to assume that responses to the follow-up questions were highly influenced by the number of people identifying with each type of identity and appearance group, because people are unlikely to identify an identity or appearance classification as being a cause of discrimination if they do not identify with the classification. Overall, 501 participants (out of a total  $N$  of 518) were prompted to answer the follow-up questions.

Based on this analysis, participants gave higher ratings on the weight perception variable ( $M = 2.21$ ,  $SD = 1.28$ ) followed by race/ethnicity ( $M = 2.19$ ,  $SD = 1.37$ ), religion ( $M = 2.06$ ,  $SD = 1.41$ ), gender identity or expression ( $M = 1.74$ ,  $SD = 1.22$ ), disability status ( $M = 1.56$ ,  $SD = 1.13$ ), and sexual orientation ( $M = 1.51$ ,  $SD = 1.02$ ). Note that only 10.6% of the sample identified as a sexual minority; Table A.1 provides the percent of people endorsing each identity/appearance and the mean ratings for discrimination experience

based on each identity/appearance variable. Thus, it is plausible to assume that the mean for the sexual orientation follow-up questions was the lowest because most of the sample had identified as heterosexual.

Table A.1

*Percent of Participants in Each Group and Discrimination Experience Means for Each Group Classification*

Group classifications	Percent of participants in each group	Discrimination experience means
Race/ethnicity		2.19
Person of color <sup>a</sup>	45.2%	
White people	54.8%	
Sexual orientation		1.51
LGBTQ+ person <sup>b</sup>	10.6%	
Heterosexual/straight person	89.4%	
Gender identity/expression		1.74
Female <sup>c</sup>	65.1%	
Nonfemale	34.9%	
Disability status		1.56
Person with a disability <sup>d</sup>	18.9%	
Person without a disability	81.1%	
Religious affiliation		2.06
Religious minority <sup>e</sup>	1.5%	
Nonreligious minority	98.5%	
Weight		2.21 <sup>g</sup>
Overweight person <sup>f</sup>	30.3%	
Nonoverweight person	69.7%	

*Note.* <sup>a</sup> Persons of color included participants who identified as Asian American, Black or African American, American Indian or Native American, Hispanic or Latino(a), Pacific Islander or Native Hawaiian, or having a race/ethnicity not on the list. <sup>b</sup> LGBTQ+ persons included participants who identified as asexual, bisexual, gay, lesbian, pansexual, queer, or having a sexual orientation not on the list. <sup>c</sup> Females included participants who identified as a cisgender female or a transgender female. <sup>d</sup> Persons with a disability included participants who identified as having a learning disability (e.g., dyslexia), having a psychological disorder (e.g., depression, PTSD, ADHD, autism spectrum disorder), having a physical or sensory disability (e.g., speech, sight, mobility, hearing), having a chronic illness (e.g., cancer, diabetes, autoimmune disorders), and/or having a disability not listed. <sup>e</sup> The religious minority group was intended to include participants who identified as Jewish or Muslim, due to literature showing that these groups experience a clear lack of privilege in the United States today (Scheitle & Ecklund, 2020). In the present study, the religious minority group consisted of 8 participants total, all of whom identified as Muslim. <sup>f</sup> Overweight persons included participants who had a Body Mass Index (BMI) greater than or equal to 25.00. Such a categorization is consistent with practice in medical settings to date (Nuttall, 2015). To calculate BMI, participants were asked to provide their height and weight. <sup>g</sup> For the discrimination experience follow-up question regarding weight, participants were asked to note whether they believed their weight perception (not BMI) was the cause of the discrimination experiences, as BMIs were only calculated when data analysis began. To categorize their

weight perception, participants were asked to select one of the following response options: Very underweight, slightly underweight, about the right weight, slightly overweight, very overweight.

To test for significant differences between the six means, 15 paired samples *t*-tests with a Bonferroni correction were run; Table A.2 provides the results of these *t*-tests.

According to a Bonferroni correction, a *p*-value would be deemed significant if it was less than .003. As can be seen in Table A.2, 10 of the 15 comparisons were significant.

Of the significant comparisons, most represented small effects, with a couple trivial effects.

Table A.2

*Paired Samples t-tests With a Bonferroni Correction to Test for Significant Differences Between Discrimination Experience Means*

Pair	<i>t</i> -values	<i>d</i> -statistic	<i>p</i> -value
Race/ethnicity – Sexual orientation	9.66	.43	< .001*
Race/ethnicity – Gender identity/expression	6.21	.28	< .001*
Race/ethnicity – Disability status	8.40	.38	< .001*
Sexual orientation – Gender identity/expression	4.18	.19	< .001*
Sexual orientation – Religion	8.11	.36	< .001*
Sexual orientation – Weight perception	10.77	.48	< .001*
Gender identity/expression – Religion	4.17	.19	< .001*
Gender identity/expression – Weight perception	6.62	.30	< .001*
Disability status – Religion	7.19	.32	< .001*
Disability status – Weight perception	10.33	.46	< .001*
Race/ethnicity – Religion	1.88	.08	.061
Race/ethnicity – Weight perception	0.20	.01	.845
Sexual orientation – Disability status	0.74	.03	.458
Gender identity/expression – Disability status	2.80	.13	.005
Religion – Weight perception	2.02	.09	.044

*Note.* \* Indicates significance according to a Bonferroni correction.

#### *Measurement Invariance*

The second supplemental analysis involved testing for measurement invariance, which pertains to the concept of factor validity. Measurement invariance is an important issue to address because the analysis tests the degree to which respondents from different groups respond similarly to the same underlying construct on an instrument, and thus, it allows researchers to draw valid and meaningful comparisons between different groups (Putnick & Bornstein, 2016). Previous research shows that commonly used measures of discrimination experience demonstrate measurement invariance across numerous populations (e.g., Hatzenbuehler et al., 2011; Kessler et al., 1999).

It was hypothesized that the factor structure of the ADES would be measurement invariant across (1) persons of color and (2) all other groups (excluding LGBTQ+).

persons), meaning that the scale would function equivalently across these two groups. These analyses omitted participants identifying with the LGBTQ+ group given that there were not enough participants with this identity to include them in the analysis. This is consistent with prior demographic data gathered at Baylor University in which most students had identified as heterosexual (Ginty et al., 2020). Invariance testing was also conducted on the EDS to provide a comparison.

To test the hypothesis, invariance testing was conducted using procedures described by Wu and Estabrook (2016). As such, a series of confirmatory factor models was estimated with each model testing an increasingly stringent level of invariance (configural, threshold, and threshold and loading). Consistent with recommendations outlined by Cheung and Rensvold (2002), it was expected that the change in the CFI ( $\Delta$ CFI) would be smaller than -.01 for each increasingly stringent model. One requirement for measurement invariance is that, as each successive model with increasingly strict constraints is tested, there should not be a substantial reduction in model fit across the models. This criterion is addressed with the chi-square test of significance and with the  $\Delta$ CFI test. Nevertheless, even if a model meets the criteria regarding a lack of difference from the preceding (less stringent) model, this does not mean that the model has a good fit. It is possible to have two models that are not significantly different from each other demonstrate poor fits. The fit statistics determine whether a model demonstrates good fit.

For the ADES, it is important to note that, when running the test for configural invariance, the top two response options were collapsed for the fourth item due to the presence of empty cells. Upon collapsing the response options, the test ran appropriately.

A chi-square test of significance demonstrated that the difference between the configural model and the model testing threshold invariance was not significant ( $\chi^2_{diff}(df_{diff} = 13) = 9.21, p = .7567$ ). Both the configural model ( $\chi^2(df = 18) = 47.96, p = .000, CFI = .992, RMSEA = .085, SRMR = .052$ ) and the model testing threshold invariance ( $\chi^2(df = 31) = 52.26, p = .010, CFI = .995, RMSEA = .055, SRMR = .052$ ) met criteria for a good fit. Similarly, a chi-square test of significance revealed that the difference between the model testing threshold invariance and the model testing threshold and loading invariance was not significant ( $\chi^2_{diff}(df_{diff} = 5) = 2.16, p = .8263$ ), and the threshold and loading invariance (or final) model produced a good fit ( $\chi^2(df = 36) = 54.61, p = .024, CFI = .995, RMSEA = .047, SRMR = .052$ ). As expected, the  $\Delta CFI$  for each increasingly stringent model was smaller than -.01. Overall, the results suggest that the ADES demonstrates measurement invariance across the two groups tested, which justifies combining all participants in the sample to calculate factor loadings, as was done to produce the loadings reported in Table 3.1.

To draw comparisons, measurement invariance testing was conducted on the EDS using the same procedures delineated above (i.e., those outlined by Wu & Estabrook, 2016). It is important to note that, when running the test for configural invariance, the top two response options needed to be collapsed for five items (i.e., items 2, 3, 6, 8, and 9) due to the presence of empty cells. Further, when testing for configural invariance, the “laavan” program in R produced a warning message indicating that the variance-covariance matrix of the estimated parameters had eigenvalues extremely close to zero. This kind of warning message suggests the model may not be identified, therefore highlighting potential issues with the EDS.



Despite this warning, a chi-square test of significance demonstrated that the difference between the configural model and the model testing threshold invariance was not significant ( $\chi^2_{diff}(df_{diff} = 22) = 27.12, p = .2066$ ). Both the configural model ( $\chi^2(df = 54) = 177.95, p = .000, CFI = .996, RMSEA = .100, SRMR = .054$ ) and the model testing threshold invariance ( $\chi^2(df = 76) = 190.30, p = .000, CFI = .996, RMSEA = .081, SRMR = .054$ ) met criteria for a good fit. Similarly, a chi-square test of significance demonstrated that the difference between the model testing threshold invariance and the model testing threshold and loading invariance was not significant ( $\chi^2_{diff}(df_{diff} = 8) = 9.56, p = .2973$ ), and the threshold and loading invariance (or final) model produced a good fit ( $\chi^2(df = 84) = 199.57, p = <.001, CFI = .996, RMSEA = .077, SRMR = .054$ ). Further, the  $\Delta CFI$  for each increasingly stringent model was smaller than -.01. Overall, these results suggest that the EDS demonstrates measurement invariance across the two groups tested; however, these results should be interpreted with caution as the statistical program had difficulty estimating the baseline model (i.e., the model testing for configural invariance).

## APPENDIX B

### Informed Consent

The information below describes this project. Click the button at the bottom of this page if you choose to complete this survey.

#### **Informed consent**

The purpose of this form is to provide you with important information about taking part in a research study. If any of the statements or words in this form are unclear, please let us know. We would be happy to answer any questions. You have the right to discuss this study with another person who is not part of the research team before making your decision whether or not to be in the study. Taking part in this study is up to you. If you decide to take part in this research study, you will have the opportunity to click the button at the bottom of this page stating that you choose to complete this survey. The people conducting this study include **Alexandra Pizzuto, a doctoral student, and Keith Sanford, PhD, a Professor, both of whom are in the department of Psychology and Neuroscience at Baylor University.** We will refer to these people as the “researchers” throughout this form.

#### **Why is this study being done?**

This study is part of a project investigating aspects of student life among undergraduate students, including the ways in which undergraduate students perceive their relationships with faculty, staff, and peers at the university as well as how they perceive their individual functioning. This study involves several surveys that can be completed in one sitting; the goal is to create and test a scale to assess experiences among undergraduate students.

#### **How long will I take part in this research study?**

Completion of this survey is expected to take approximately 20 to 30 minutes.

#### **What will happen if I take part in this research study?**

If you agree to take part in this study, you will complete a survey that includes questions about your interactions with faculty, interactions with peers, engagement in college life, postgraduate aspirations, mood, feelings, thoughts, and coping strategies.

#### **What are the risks and benefits of taking part in this research study?**

This questionnaire includes several questions about your interpersonal relationships and current functioning in college. If you are experiencing life difficulties in these areas, you may find it unpleasant or stressful to think about them as you complete this questionnaire. If you do not want to answer questions about these topics, you should not participate in this research. Confidentiality will be maintained to the degree permitted by the

technology used. Your participation in this online survey involves risks similar to a person's everyday use of the Internet, which could include illegal interception of the data by another party. If you are concerned about your data security, you should not participate in this research. You may or may not benefit from taking part in this study. It is possible that you may find this survey beneficial because the process of answering questions may help you clarify your own personal perspectives and priorities. The results of this study will be used to help researchers and clinicians better understand how to assess experiences among college students and to improve relationships between students and other members of the university (e.g., faculty, peers). Thus, others may benefit in the future from the information that is learned in this study.

### **How will you keep my study records confidential?**

The only identifying information we collect in this study will be an IP address and a SONA ID number. We will keep this identifying information confidential by ensuring it is stored using password protection. We will make every effort to keep your records confidential. The results of this study may also be used for teaching, publications, or presentations at professional meetings; however, your individual results will not be discussed.

By law, researchers must release certain information to the appropriate authorities if they have reasonable cause to believe any of the following: Abuse or neglect of a child; abuse, neglect, or exploitation of an elderly person or disabled adult; risk of harming yourself or others; or alleged incidents of sexual harassment, sexual assault, dating violence, or stalking, committed by or against a person enrolled at or employed by Baylor University at the time of the incident.

### **Study participation and early withdrawal**

Taking part in this study is your choice. You are free not to take part or to withdraw at any time for any reason. No matter what you decide, there will be no penalty or loss of benefit to which you are entitled. If you decide to withdraw from this study, the information that you have already provided will be kept confidential. You cannot withdraw information collected prior to your withdrawal.

### **Will I get compensated for taking part in this research study?**

Upon completing the survey, you will receive research credit and/or extra credit in one of your courses depending upon guidelines outlined by your professor.

### **What will it cost me to take part in this research study?**

There are no costs to you for taking part in this research study.

### **What if I have any questions or concerns about this research study?**

If you have any questions or concerns about the study or any problems that result from participation, you may contact **Alexandra Pizzuto or Dr. Keith Sanford at Baylor University, Department of Psychology and Neuroscience, One Bear Place #97334, Waco, TX 76798-7334, emails [Alexandra\\_Pizzuto1@baylor.edu](mailto:Alexandra_Pizzuto1@baylor.edu) and [Keith\\_Sanford@baylor.edu](mailto:Keith_Sanford@baylor.edu). If you want to speak with someone not directly**

**involved in this research study, you may contact the Baylor University IRB through the Office of the Vice Provost for Research at 254-710-1438. You can contact this office to talk about your rights as a research subject, your concerns about the research, or a complaint about the research. In addition, you may contact the Baylor University Title IX office at 254-710-8454 or [titleix\\_coordinator@baylor.edu](mailto:titleix_coordinator@baylor.edu) if you would like to make a report related to an event involving discrimination and/or harassment.**

**Statement of consent**

By clicking the button below, I am attesting that I am at least 18 years old, that I have read and understood the information above, and that I freely give my consent to participate in this research.

I agree.

I do not wish to participate in this research (please close your browser).

## APPENDIX C

### Measures and Demographics Questions

#### *Academia Discrimination Experience Scale (ADES)*

Instructions: Below, you will be asked to respond to a set of questions that ask you to categorize yourself based on your identity or appearance. Select the option from each drop-down menu that best characterizes how you would categorize your identity or appearance.

What is your current gender identity? Note that **cisgender** describes a person whose gender identity is the same as their sex assigned at birth, and **transgender** describes a person whose gender identity or gender expression differs from the sex that they were assigned at birth.

- Cisgender male (1)
- Cisgender female (2)
- Transgender male (3)
- Transgender female (4)
- Non-binary (5)
- Genderqueer/Gender nonconforming (6)
- Having a gender identity not on the list (7)

What is your sexual orientation?

- Heterosexual/Straight (1)
- Asexual (2)
- Bisexual (3)
- Gay (4)
- Lesbian (5)
- Pansexual (6)
- Queer (7)
- Having a sexual orientation not on the list (8)

Select the response that best represents your race/ethnicity.

- Asian American (1)
- Black or African American (2)
- American Indian, Native American (3)
- Hispanic or Latino(a) (4)
- Pacific Islander or Native Hawaiian (5)
- White (Not Hispanic) (6)
- Having a race/ethnicity not on the list (7)

Select the response that best represents your current religious preference.

- Agnostic (1)
- Atheist (2)
- Buddhist (3)
- Christian (4)
- Hindu (5)
- Jewish (6)
- Muslim (7)
- Sikh (8)
- Having a religious preference not on the list (9)

What is your approximate height (in feet and inches)? Provide numeric values only.

- Feet (1) \_\_\_\_\_
- Inches (2) \_\_\_\_\_

What is your approximate weight (in pounds)? Provide numeric values only.

\_\_\_\_\_

How would you describe your weight?

- Very underweight (1)
- Slightly underweight (2)
- About the right weight (3)
- Slightly overweight (4)
- Very overweight (5)

The next question will ask about your disability status. A disability could include having a learning disability (e.g., dyslexia), psychological disorder (e.g., depression, PTSD, ADHD, autism spectrum disorder), physical or sensory disability (e.g., speech, sight, mobility, hearing), or chronic illness (e.g., cancer, diabetes, autoimmune disorders).

Which option best represents how you define your current disability status?

- Having a disability (1)
- Not having a disability (2)

[For participants who identified as having a disability] You described yourself as having a disability. Please select all of the options that describe your disability.

- having a learning disability (e.g., dyslexia) (1)
- having a psychological disorder (e.g., depression, PTSD, ADHD, autism spectrum disorder) (2)
- having a physical or sensory disability (e.g., speech, sight, mobility, hearing) (3)
- having a chronic illness (e.g., cancer, diabetes, autoimmune disorders) (4)
- having a disability not listed above (5)

Instructions: You reported having the following identity or appearance: [participant responses on all six identity and appearance variables were piped in]

The questions on this page ask about your experiences as a college student with this identity or appearance.

1. At college, how much do you trust that peers, faculty, and staff will NOT discriminate against you due to your identity or appearance?
  - a. Completely trust that they will NOT discriminate (1)
  - b. Almost completely trust (2)
  - c. Mostly trust (3)
  - d. Somewhat trust (4)
  - e. Do NOT trust (5)
2. Does this happen to you? At college, I am stereotyped or judged due to my identity or appearance.
  - a. I am confident this never happens to me. (1)
  - b. I doubt this ever happens to me. (2)
  - c. I do not know if this happens to me. (3)
  - d. This happens to me, but only rarely. (4)
  - e. This happens to me occasionally. (5)
  - f. This happens to me frequently. (6)
3. At college, how well do peers, faculty, and staff understand people with your identity or appearance?
  - a. Perfectly understand (1)
  - b. Almost perfectly understand (2)
  - c. Mostly understand (3)
  - d. Somewhat understand (4)
  - e. Do NOT understand (5)
4. Does this happen to you? At college, I am treated as if I am inferior due to my identity or appearance.
  - a. I am confident this never happens to me. (1)
  - b. I doubt this ever happens to me. (2)
  - c. I do not know if this happens to me. (3)
  - d. This happens to me, but only rarely. (4)
  - e. This happens to me occasionally. (5)
  - f. This happens to me frequently. (6)
5. At college, I feel like I am at a place that welcomes people of my identity or appearance.
  - a. Completely true (1)
  - b. Almost completely true (2)
  - c. Mostly true (3)
  - d. Somewhat true (4)
  - e. Not true (5)
6. I would receive better treatment from peers, faculty, and staff if I belonged to a group with a different identity or appearance.
  - a. Completely feel this way (1)
  - b. Somewhat feel this way (2)
  - c. Might slightly feel this way (3)
  - d. Do not feel this way (4)

- e. Definitely do not feel this way (5)

*Everyday Discrimination Scale (EDS)*

Response scale for each item:

- Almost everyday (1)
- At least once a week (2)
- A few times a month (3)
- A few times a year (4)
- Less than once a year (5)
- Never (6)

**At college**, how often do any of the following things happen to you?

1. Due to your identity or appearance, you are treated with less courtesy than other people are.
2. Due to your identity or appearance, you are treated with less respect than other people are.
3. Due to your identity or appearance, you receive poorer service than other people (for example, at campus offices or dining halls).
4. Due to your identity or appearance, people act as if they think you are not smart.
5. Due to your identity or appearance, people act as if they are afraid of you.
6. Due to your identity or appearance, people act as if they think you are dishonest.
7. Due to your identity or appearance, people act as if they're better than you are.
8. Due to your identity or appearance, you are called names or insulted.
9. Due to your identity or appearance, you are threatened or harassed.

*Discrimination Experience Follow-up Questions*

[For participants who endorsed *any* level of discrimination on either the ADES or EDS, they completed the following questions]

Instructions: The previous pages asked about different types of discrimination you may have experienced at college due to your identity or appearance. If you experienced any of these types of discrimination, we would like to know the reason for this discrimination.

Response scale for each question:

- I am confident this never happens to me. (1)
- I doubt this ever happens to me. (2)
- I do not know if this happens to me. (3)
- This happens to me, but only rarely. (4)
- This happens to me occasionally. (5)
- This happens to me frequently. (6)



1. You reported having the following gender identity: [participant responses were piped in]. Do you experience discrimination at college (such as any type of discrimination listed on the previous pages) due to your **gender identity**?
2. You reported having the following sexual orientation: [participant responses were piped in]. Do you experience discrimination at college (such as any type of discrimination listed on the previous pages) due to your **sexual orientation**?
3. You reported having the following race/ethnicity: [participant responses were piped in]. Do you experience discrimination at college (such as any type of discrimination listed on the previous pages) due to your **race/ethnicity**?
4. You reported having the following religion: [participant responses were piped in]. Do you experience discrimination at college (such as any type of discrimination listed on the previous pages) due to your **religion**?
5. You reported having the following disability status: [participant responses were piped in]. Do you experience discrimination at college (such as any type of discrimination listed on the previous pages) due to your **disability status**?
6. You reported having the following weight perception: [participant responses were piped in]. Do you experience discrimination at college (such as any type of discrimination listed on the previous pages) due to your **weight**?

### *Academic Validation*

Instructions: Please indicate how often you have experienced the following in class at Baylor:

Response scale for each item:

- Very Often (1)
- Often (2)
- Sometimes (3)
- Seldom (4)
- Never (5)

1. I feel like my contributions are valued in my classes.
2. Instructors provide me with feedback that help me judge my progress.
3. Instructors are able to determine my level of understanding of course material.
4. Instructors encourage me to ask questions and participate in discussions.
5. Instructors show concern about my progress.
6. Instructors encourage me to meet with them after or outside of class.

### *General Interpersonal Validation*

Instructions: Please indicate the extent to which you agree or disagree with the following statements. Note that “faculty” refers to a group of people, particularly professors and

lecturers, who impart knowledge, while “staff” refers to a group of people who manage non-teaching jobs within a college.

Response scale for each item:

- Strongly Agree (1)
- Agree (2)
- Disagree (3)
- Strongly Disagree (4)

1. Faculty believe in my potential to succeed academically.
2. At least one faculty member has taken an interest in my development.
3. At least one staff member has taken an interest in my development.
4. Staff recognize my achievements.
5. Faculty empower me to learn here.
6. Staff encourage me to get involved in campus activities.

### *Interpersonal Resilience Inventory (IRI)*

Instructions: The next questions will ask about your friends at college. When we ask about your friends at college, please include current friends, roommates, and romantic partners. Given this definition, approximately how many friends at college do you have? Provide a numerical answer.

---

In the next section you will be given descriptions of events that you may have experienced with your college friends.

Response scale for each item:

- This definitely did not happen. (1)
- I do not think this happened. (2)
- This happened once. (3)
- This happened a few times. (4)
- This happened once a week. (5)
- This happened a few times per week. (6)
- This happened every day. (7)
- This happened a few times per day. (8)

1. **Event 1:** You laughed together or enjoyed humor with a college friend. How many times did this event occur for you in the past month?
2. **Event 2:** In your relationship with a college friend, one of you felt annoyed or frustrated about something the other did. How many times did this event occur for you in the past month?

3. **Event 3:** You and a college friend discussed a stressful situation using communication that was clear and accurate. How many times did this event occur for you in the past month?
4. **Event 4:** In your relationship with a college friend, there was a situation where one of you did not listen carefully to something the other said. How many times did this event occur for you in the past month?
5. **Event 5:** In your relationship with a college friend, one of you helped the other by maintaining a positive attitude and being optimistic. How many times did this event occur for you in the past month?
6. **Event 6:** In your relationship with a college friend, one of you made it more difficult for the other by having a negative attitude and being pessimistic. How many times did this event occur for you in the past month?
7. **Event 7:** In your relationship with a college friend, one of you was attentive to the other's needs. How many times did this event occur for you in the past month?
8. **Event 8:** In your relationship with a college friend, one of you decided it was best to avoid discussing a stressful situation with the other. How many times did this event occur for you in the past month?
9. **Event 9:** You and a college friend worked together like a team. How many times did this event occur for you in the past month?
10. **Event 10:** In your relationship with a college friend, one of you was critical or hostile or blamed the other. How many times did this event occur for you in the past month?
11. **Event 11:** In your relationship with a college friend, one of you helped the other by remaining calm, stable and strong. How many times did this event occur for you in the past month?
12. **Event 12:** In your relationship with a college friend, one of you made it difficult for the other by being overly emotional, unstable, or weak. How many times did this event occur for you in the past month?
13. **Event 13:** You and a college friend spent time together doing things as a pair. How many times did this event occur for you in the past month?
14. **Event 14:** In your relationship with a college friend, one of you had a clear opportunity to notice the other's needs, but failed to do so. How many times did this event occur for you in the past month?
15. **Event 15:** In your relationship with a college friend, one of you helped the other by using special skills or abilities to manage a stressful situation. How many times did this event occur for you in the past month?
16. **Event 16:** In your relationship with a college friend, there was an interaction involving a miscommunication or misunderstanding. How many times did this event occur for you in the past month?

### *Emotional Engagement*

Instructions: Please indicate the extent to which the following statements are true of you.

Response scale for each item:

- Not at all true (1)
- Rarely true (2)
- Somewhat true (3)
- Very true (4)

1. When I'm in class, I feel good.
2. When we work on something in class, I feel interested.
3. My classes are fun.
4. I enjoy learning new things in class.
5. When we work on something in class, I get involved.

### *Behavioral Engagement*

Instructions: Please indicate the extent to which the following statements are true of you.

Response scale for each item:

- Not at all true (1)
- Rarely true (2)
- Somewhat true (3)
- Very true (4)

1. I try hard to do well in school.
2. In class, I work as hard as I can.
3. When I'm in class, I participate in class discussions.
4. I pay attention in class.
5. When I'm in class, I listen very carefully.

### *Intrinsic Value*

Instructions: Please indicate the extent to which the following statements are true of you.

Response scale for each item:

- Very untrue of me (1)
- Untrue of me (2)
- Somewhat untrue of me (3)
- Neutral (4)
- Somewhat true of me (5)
- True of me (6)
- Very true of me (7)

1. I prefer class work that is challenging so I can learn new things.

2. It is important for me to learn what is being taught in my classes.
3. I like what I am learning in my classes.
4. I think I will be able to use what I learn in each of my classes in other classes.
5. I often choose paper topics I will learn something from even if they require more work.
6. Even when I do poorly on a test I try to learn from my mistakes.
7. I think that what I am learning in my classes is useful for me to know.
8. I think that what we are learning in my classes is interesting.
9. Understanding my coursework is important to me.

### *Cognitive Strategy Use*

Instructions: Please indicate the extent to which the following statements are true of you.

Response scale for each item:

- Very untrue of me (1)
- Untrue of me (2)
- Somewhat untrue of me (3)
- Neutral (4)
- Somewhat true of me (5)
- True of me (6)
- Very true of me (7)

1. When I study for a test, I try to put together the information from class and from the book.
2. When I do homework, I try to remember what the professor said in class so I can answer the questions correctly.
3. It is hard for me to decide what the main ideas are in what I read.
4. When I study, I put important ideas into my own words.
5. I always try to understand what the professor is saying even if it doesn't make sense.
6. When I study for a test, I try to remember as many facts as I can.
7. When studying, I copy my notes over to help me remember material.
8. When I study for a test, I practice saying the important facts over and over to myself.
9. I use what I have learned from old homework assignments and the textbook to do new assignments.
10. When I am studying a topic, I try to make everything fit together.
11. When I read material for a class, I say the words over and over to myself to help me remember.
12. I outline the chapters in my book to help me study.
13. When reading, I try to connect the things I am reading about with what I already know.

*Self-Efficacy*

Instructions: Please indicate the extent to which the following statements are true of you.

Response scale for each item:

- Very untrue of me (1)
- Untrue of me (2)
- Somewhat untrue of me (3)
- Neutral (4)
- Somewhat true of me (5)
- True of me (6)
- Very true of me (7)

1. Compared with other students in my classes, I expect to do well.
2. I'm certain I can understand the ideas taught in my classes.
3. I expect to do very well in my classes.
4. Compared with others in my classes, I think I'm a good student.
5. I am sure I can do an excellent job on the problems and tasks assigned for my classes.
6. I think I will receive a good grade in my classes.
7. My study skills are excellent compared with others in my classes.
8. Compared with other students in my classes, I think I know a great deal about each subject.
9. I know that I will be able to learn the material for my classes.

*Unweighted Grade Point Average (GPA)*

In the text box below, list the courses you took during the previous semester and the grade you received in each course (e.g., Calculus, B+).

---

---

---

---

---

*Postgraduate Educational Aspirations*

What is the highest academic degree that you intend to obtain in your lifetime? Select the option that best fits your response.

- None (1)
- Vocational certificate (2)

- Associate (A.A., A.S., or equivalent) (3)
  - Bachelor's (B.A., B.S., B.D., etc.) (4)
  - Master's (M.A., M.S., M.B.A., etc.) (5)
  - J.D. (Law) (6)
  - M.D., D.D.S., D.V.M., etc. (Medical) (7)
  - Ph.D. (8)
  - Professional Doctorate (Ed.D., Psy.D., etc.) (9)
  - Other (indicate in the text box below) (10)
- 

### *K6 Generalized Distress Scale*

Response scale for each item:

- All of the time (1)
- Most of the time (2)
- Some of the time (3)
- A little of the time (4)
- None of the time (5)

During the past 30 days, about how often did you feel . . .

1. . . . nervous?
2. . . . hopeless?
3. . . . restless or fidgety?
4. . . . so depressed that nothing could cheer you up?
5. . . . that everything was an effort?
6. . . . worthless?

### *Coping Strategies Inventory- Short Form (CSI-SF)*

When was the last time you faced something that was a stressful situation in your life?

- I am currently facing a stressful situation. (1)
- Within the last month. (2)
- Within the last few months. (3)
- Within the last year. (4)
- Longer than a year ago. (5)

Instructions: Please indicate how often you utilize each of the following behaviors to **cope** when you face a stressful situation:

Response scale for each item:

- Never (1)
- Seldom (2)

- Sometimes (3)
- Often (4)
- Almost always (5)

1. I make a plan of action and follow it.
2. I look for the silver lining or try to look on the bright side of things.
3. I try to spend time alone.
4. I hope the problem will take care of itself.
5. I try to let my emotions out.
6. I try to talk about it with a friend or family.
7. I try to put the problem out of my mind.
8. I tackle the problem head on.
9. I step back from the situation and try to put things into perspective.
10. I tend to blame myself.
11. I let my feelings out to reduce the stress.
12. I hope for a miracle.
13. I ask a close friend or relative that I respect for help or advice.
14. I try not to think about the problem.
15. I tend to criticize myself.
16. I keep my thoughts and feelings to myself.

### *Demographics Questions*

What is your age?

---

What year are you currently completing at Baylor?

- First year (1)
- Second year (2)
- Third year (3)
- Fourth year (4)
- Fifth year (or more) (5)

What is your current relationship status?

- Single (1)
- In a dating relationship (2)
- Cohabiting or in a domestic partnership (3)
- Married (4)
- Separated or divorced (5)
- Widowed (6)

Count any parent, guardian, or step-parent that played a role in your life when you were growing up. How many parents do you have?

- 0 parents (1)



- 1 parent (2)
- 2 parents (3)
- 3 parents (4)
- 4 parents (5)
- 5 parents (6)

Response scale for each question:

- None (1)
  - High school diploma or G.E.D. (11)
  - Vocational certificate (2)
  - Associate (A.A., A.S., or equivalent) (3)
  - Bachelor's (B.A., B.S., B.D., etc.) (4)
  - Master's (M.A., M.S., M.B.A., etc.) (5)
  - J.D. (Law) (6)
  - M.D., D.D.S., D.V.M., etc. (Medical) (7)
  - Ph.D. (8)
  - Professional Doctorate (Ed.D., Psy.D., etc.) (9)
  - Other (indicate in the text box below) (10)
- 

[For participants who endorsed having 1 parent]

What is the highest level of education that your parent received?

[For participants who endorsed having 2 parents]

What is the highest level of education that your **first** parent received?

What is the highest level of education that your **second** parent received?

[For participants who endorsed having 3 parents]

What is the highest level of education that your **first** parent received?

What is the highest level of education that your **second** parent received?

What is the highest level of education that your **third** parent received?

[For participants who endorsed having 4 parents]

What is the highest level of education that your **first** parent received?

What is the highest level of education that your **second** parent received?

What is the highest level of education that your **third** parent received?

What is the highest level of education that your **fourth** parent received?

[For participants who endorsed having 5 parents]

What is the highest level of education that your **first** parent received?

What is the highest level of education that your **second** parent received?

What is the highest level of education that your **third** parent received?

What is the highest level of education that your **fourth** parent received?

What is the highest level of education that your **fifth** parent received?

## *Comments*

**Optional:** Do you have any comments, ideas, or concerns about this survey that you would like to share with the researchers?

## REFERENCES

- Addison, C., Campbell-Jenkins, B., Sarpong, D., Kibler, J., Singh, M., Dubbert, P., Wilson, G., Payne, T., & Taylor, H. (2007). Psychometric evaluation of a coping strategies inventory short-form (CSI-SF) in the Jackson heart study cohort. *International Journal of Environmental Research and Public Health*, *4*(4), 289–295. <https://doi.org/10.3390/ijerph200704040004>
- American Council on Education. (2020). *Race and ethnicity in higher education: A status report*. American Council on Education. <http://1xfsu31b52d33idlp13twtos-wpengine.netdna-ssl.com/wp-content/uploads/2020/11/REHE-2020-final.pdf>
- Baker, F. B. (2001). *The basics of item response theory*. Springer.
- Banks, K. H. (2010). African American college students' experience of racial discrimination and the role of college hassles. *Journal of College Student Development*, *51*(1), 23–34. <https://doi.org/10.1353/csd.0.0115>
- Barnes, L. L., De Leon, C. F. M., Wilson, R. S., Bienias, J. L., Bennett, D. A., & Evans, D. A. (2004). Racial differences in perceived discrimination in a community population of older Blacks and Whites. *Journal of Aging and Health*, *16*(3), 315–337. <https://doi.org/10.1177/0898264304264202>
- Bastos, J. L., Celeste, R. K., Faerstein, E., & Barros, A. J. D. (2010). Racial discrimination and health: A systematic review of scales with a focus on their psychometric properties. *Social Science & Medicine*, *70*(7), 1091–1099. <https://doi.org/10.1016/j.socscimed.2009.12.020>
- Becerra, M. B., Arias, D., Cha, L., & Becerra, B. J. (2021). Self-esteem among college students: The intersectionality of psychological distress, discrimination and gender. *Journal of Public Mental Health*, *20*(1), 15–23. <https://doi-org.ezproxy.baylor.edu/10.1108/JPMH-05-2020-0033>
- Becker, M., Martin, L., Wajeeh, E., Ward, J., & Shern, D. (2002). Students with mental illnesses in a university setting: Faculty and student attitudes, beliefs, knowledge, and experiences. *Psychiatric Rehabilitation Journal*, *25*(4), 359–368. <https://doi-org.ezproxy.baylor.edu/10.1037/h0095001>
- Belch, H.A. (2011). Understanding the experiences of students with psychiatric disabilities: A foundation for creating conditions of support and success. *New Directions for Student Services*, *2011*(134), 73–94. <https://doi.org/10.1002/ss.396>

- Bernstein, K. S., Park, S. Y., Shin, J., Cho, S., & Park, Y. (2011). Acculturation, discrimination and depressive symptoms among Korean immigrants in New York City. *Community Mental Health Journal, 47*(1), 24–34. <https://doi.org/10.1007/s10597-009-9261-0>
- Billingsley, J. T., & Hurd, N. M. (2019). Discrimination, mental health and academic performance among underrepresented college students: The role of extracurricular activities at predominantly white institutions. *Social Psychology of Education, 22*(2), 421–446. <https://doi.org/10.1007/s11218-019-09484-8>
- Bird, S. T., & Bogart, L. M. (2001). Perceived race-based and socioeconomic status (SES)-based discrimination in interactions with health care providers. *Ethnicity & Disease, 11*(3), 554-563.
- Brondolo, E., Kelly, K. P., Coakley, V., Gordon, T., Thompson, S., Levy, E., Cassells, A., Tobin, J. N., Sweeney, M., & Contrada, R. J. (2005). The Perceived Ethnic Discrimination Questionnaire: Development and Preliminary Validation of a Community Version. *Journal of Applied Social Psychology, 35*(2), 335–365. <https://doi-org.ezproxy.baylor.edu/10.1111/j.1559-1816.2005.tb02124.x>
- Bronfenbrenner, U. (1977). Toward an experimental ecology of human development. *American Psychologist, 32*(7), 513–531. <https://doi-org.ezproxy.baylor.edu/10.1037/0003-066X.32.7.513>
- Browning, B. R., McDermott, R. C., Scaffa, M. E., Booth, N. R., & Carr, N. T. (2018). Character strengths and first-year college students' academic persistence attitudes: An integrative model. *The Counseling Psychologist, 46*(5), 608–631. <https://doi-org.ezproxy.baylor.edu/10.1177/0011000018786950>
- Burn, S. M., Kadlec, K., & Rexer, R. (2005). Effects of subtle heterosexism on gays, lesbians, and bisexuals. *Journal of Homosexuality, 49*(2), 23–38. [https://doi.org/10.1300/J082v49n02\\_02](https://doi.org/10.1300/J082v49n02_02)
- Busby, D. R., Horwitz, A. G., Zheng, K., Eisenberg, D., Harper, G. W., Albucher, R. C., Roberts, L. W., Coryell, W., Pistorello, J., & King, C. A. (2020). Suicide risk among gender and sexual minority college students: The roles of victimization, discrimination, connectedness, and identity affirmation. *Journal of Psychiatric Research, 121*, 182–188. <https://doi-org.ezproxy.baylor.edu/10.1016/j.jpsychires.2019.11.013>
- Cadenas, G. A., Peña, D., Minero, L. P., Rojas-Araúz, B. O., & Lynn, N. (2021). Critical agency and vocational outcome expectations as coping mechanisms among undocumented immigrant students. *Journal of Latinx Psychology, 9*(2), 92–108. <https://doi-org.ezproxy.baylor.edu/10.1037/lat0000178>

- Carter, R. T., Johnson, V. E., Kirkinis, K., Roberson, K., Muchow, C., & Galgay, C. (2019). A meta-analytic review of racial discrimination: Relationships to health and culture. *Race and Social Problems, 11*, 15–32. <https://doi.org/10.1007/s12552-018-9256-y>
- Castro, S. A., Sasser, J., Sills, J., & Doane, L. D. (2022). Reciprocal associations of perceived discrimination, internalizing symptoms, and academic achievement in Latino students across the college transition. *Cultural Diversity and Ethnic Minority Psychology, 28*(1), 1–12. <https://doi-org.ezproxy.baylor.edu/10.1037/cdp0000528>
- Cech, E. A., & Rothwell, W. R. (2018). LGBTQ inequality in engineering education. *Journal of Engineering Education (Washington, D.C.), 107*(4), 583–610. <https://doi.org/10.1002/jee.20239>
- Chavous, T. M., Richardson, B. L., Webb, F. R., Fonseca-Bolorin, G., & Leath, S. (2018). Shifting contexts and shifting identities: Campus race-related experiences, racial identity, and academic motivation among Black students during the transition to college. *Race and Social Problems, 10*(18), 1–18. <http://dx.doi.org/10.1007/s12552-017-9218-9>
- Chen, A., Szalacha, L. A., & Menon, U. (2014). Perceived discrimination and its associations with mental health and substance use among Asian American and Pacific Islander undergraduate and graduate Students. *Journal of American College Health, 62*(6), 390–398. <https://doi.org/10.1080/07448481.2014.917648>
- Cheng, M. Y., Wang, S.-M., Lam, Y. Y., Luk, H. T., Man, Y. C., & Lin, C.-Y. (2018). The relationships between weight bias, perceived weight stigma, eating behavior, and psychological distress among undergraduate students in Hong Kong. *Journal of Nervous and Mental Disease, 206*(9), 705–710. <https://doi-org.ezproxy.baylor.edu/10.1097/NMD.0000000000000869>
- Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling, 9*(2), 233–255. [http://dx.doi.org/10.1207/S15328007SEM0902\\_5](http://dx.doi.org/10.1207/S15328007SEM0902_5)
- Clark, R., Coleman, A. P., & Novak, J. D. (2004). Brief report: Initial psychometric properties of the everyday discrimination scale in black adolescents. *Journal of Adolescence, 27*(3), 363–368. <https://doi.org/10.1016/j.adolescence.2003.09.004>
- Cokley, K., Hall-Clark, B., & Hicks, D. (2011). Ethnic minority-majority status and mental health: The mediating role of perceived discrimination. *Journal of Mental Health Counseling, 33*(3), 243–263. <https://doi.org/10.17744/mehc.33.3.u1n011t020783086>

- Cokley, K., Smith, L., Bernard, D., Hurst, A., Jackson, S., Stone, S., Awosogba, O., Saucer, C., Bailey, M., & Roberts, D. (2017). Impostor feelings as a moderator and mediator of the relationship between perceived discrimination and mental health among racial/ethnic minority college students. *Journal of Counseling Psychology, 64*(2), 141–154. <https://doi-org.ezproxy.baylor.edu/10.1037/cou0000198>
- Coll, C. G., Crnic, K., Lamberty, G., Wasik, B. H., Jenkins, R., Garcia, H. V., et al. (1996). An integrative model for the study of developmental competencies in minority children. *Child Development, 67*(5), 1891–1914.
- Comrey, A. L., & Lee, H. B. (1992). *A first course in factor analysis* (2nd ed.). Psychology Press.
- Crenshaw, K. (1989). Demarginalizing the intersection of race and sex: Black feminist critique of antidiscrimination doctrine, feminist theory and antiracist politics. *University of Chicago Legal Forum, 1989*, 139–168.
- D'Augelli, A. R., & Hershberger, S. L. (1993). African American undergraduates on a predominantly White campus: Academic factors, social networks, and campus climate. *The Journal of Negro Education, 62*(1), 67–81. <https://doi.org/10.2307/2295400>
- Del Toro, J., & Hughes, D. (2020). Trajectories of discrimination across the college years: Associations with academic, psychological, and physical adjustment outcomes. *Journal of Youth and Adolescence, 49*(4), 772–789. <https://doi-org.ezproxy.baylor.edu/10.1007/s10964-019-01147-3>
- Donovan, R. A., Huynh, Q., Park, I. J. K., Kim, S. Y., Lee, R. M., & Robertson, E. (2013). Relationships among identity, perceived discrimination, and depressive symptoms in eight ethnic-generational groups. *Journal of Clinical Psychology, 69*(4), 397–414. <https://doi-org.ezproxy.baylor.edu/10.1002/jclp.21936>
- Dotterer, A. M., McHale, S. M., & Crouter, A. C. (2009). Sociocultural factors and school engagement among African American youth: The roles of racial discrimination, racial socialization, and ethnic identity. *Applied Developmental Science, 13*(2), 61–73. <https://doi.org/10.1080/10888690902801442>
- Dover, T. L., Major, B., & Glace, A. M. (2020). Discrimination, health, and the costs and benefits of believing in system fairness. *Health Psychology, 39*(3), 230–239. <https://doi-org.ezproxy.baylor.edu/10.1037/hea0000841.supp>
- Fahey, M. C., Morris, J. D., Robinson, L. A., & Pebley, K. (2021). Association between perceived discrimination and vaping among college students. *Substance Use & Misuse*. <https://doi-org.ezproxy.baylor.edu/10.1080/10826084.2021.1887250>

- Feagin, J. R. (2006). *Systemic racism: A theory of oppression*. Routledge/Taylor & Francis Group.
- Francis, G. L., Duke, J. M., Fujita, M., & Sutton, J. C. (2019). "It's a constant fight:" Experiences of college students with disabilities. *Journal of Postsecondary Education and Disability*, 32(3), 247-262.
- Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research*, 74(1), 59–109. <https://doi.org/10.3102/00346543074001059>
- Fuller-Rowell, T. E., Curtis, D. S., El-Sheikh, M., Duke, A. M., Ryff, C. D., & Zgierska, A. E. (2017). Racial discrimination mediates race differences in sleep problems: A longitudinal analysis. *Cultural Diversity and Ethnic Minority Psychology*, 23(2), 165–173. <https://doi-org.ezproxy.baylor.edu/10.1037/cdp0000104>
- Ginty, A., Ryan-Pettes, S., Limbers, C., Tsang, J., & Scullin, M. (2020). *The Department of Psychology and Neuroscience Diversity and Inclusion Task Force initial report*. Baylor University. <https://www.baylor.edu/psychologyneuroscience/doc.php/361991.pdf>
- Glick, P., & Fiske, S. T. (1999). Sexism and other "isms": Independence, status, and the ambivalent content of stereotypes. In W. B. Swann, Jr., J. H. Langlois, & L. A. Gilbert (Eds.), *Sexism and stereotypes in modern society: The gender science of Janet Taylor Spence* (pp. 193–221). American Psychological Association. <https://doi.org/10.1037/10277-008>
- Grzegorek, J. L., Slaney, R. B., Franze, S., & Rice, K. G. (2004). Self-criticism, dependency, self-esteem, and grade point average satisfaction among clusters of perfectionists and nonperfectionists. *Journal of Counseling Psychology*, 51(2), 192–200. <https://doi-org.ezproxy.baylor.edu/10.1037/0022-0167.51.2.192>
- Hall, A. R., Nishina, A., & Lewis, J. A. (2017). Discrimination, friendship diversity, and STEM-related outcomes for incoming ethnic minority college students. *Journal of Vocational Behavior*, 103(Part B), 76–87. <https://doi-org.ezproxy.baylor.edu/10.1016/j.jvb.2017.08.010>
- Hanson, J. M., Paulsen, M. B., & Pascarella, E. T. (2016). Understanding graduate school aspirations: The effect of good teaching practices. *Higher Education*, 71(5), 735–752. <https://doi.org/10.1007/s10734-015-9934-2>
- Harrell, S. P. (2000). A multidimensional conceptualization of racism-related stress: Implications for the well-being of people of color. *American Journal of Orthopsychiatry*, 70(1), 42–57. <https://doi-org.ezproxy.baylor.edu/10.1037/h0087722>

- Harrell, S. P., Merchant, M. A., & Young, S. A. (1997). *Psychometric properties of the racism and life experiences scales (RaLES)*. Unpublished manuscript.
- Hatzenbuehler, M. L., Corbin, W. R., & Fromme, K. (2011). Discrimination and alcohol-related problems among college students: A prospective examination of mediating effects. *Drug and Alcohol Dependence, 115*(3), 213–220. <https://doi-org.ezproxy.baylor.edu/10.1016/j.drugalcdep.2010.11.002>
- Hausmann, L. R. M., Hannon, M. J., Kresevic, D. M., Hanusa, B. H., Kwoh, C. K., & Ibrahim, S. A. (2011). Impact of perceived discrimination in healthcare on patient-provider communication. *Medical Care, 49*(7), 626–633. <https://doi-org.ezproxy.baylor.edu/10.1097/MLR.0b013e318215d93c>
- Hausmann, L. R., Kressin, N. R., Hanusa, B. H., & Ibrahim, S. A. (2010). Perceived racial discrimination in health care and its association with patients' healthcare experiences: Does the measure matter?. *Ethnicity & Disease, 20*(1), 40–47.
- Hightow-Weidman, L. B., Phillips, G. II, Jones, K. C., Outlaw, A. Y., Fields, S. D., Smith, J. C., & The YMSM of Color SPNS Initiative Study Group. (2011). Racial and sexual identity-related maltreatment among minority YMSM: Prevalence, perceptions, and the association with emotional distress. *AIDS Patient Care and STDs, 25*(Sup1), S39–S45. <https://doi.org/10.1089/apc.2011.9877>
- Hill, L. K., Kobayashi, I., & Hughes, J. W. (2007). Perceived racism and ambulatory blood pressure in African American college students. *Journal of Black Psychology, 33*(4), 404–421. <https://doi-org.ezproxy.baylor.edu/10.1177/0095798407307042>
- Hollingsworth, D. W., Cole, A. B., O'Keefe, V. M., Tucker, R. P., Story, C. R., & Wingate, L. R. (2017). Experiencing racial microaggressions influences suicide ideation through perceived burdensomeness in African Americans. *Journal of Counseling Psychology, 64*(1), 104–111. <https://doi.org/10.1037/cou0000177>
- Hong, J. S., Woodford, M. R., Long, L. D., & Renn, K. A. (2016). Ecological covariates of subtle and blatant heterosexist discrimination among LGBQ college students. *Journal of Youth and Adolescence, 45*(1), 117–131. <https://doi.org/10.1007/s10964-015-0362-5>
- Houck, C. K., Asselin, S. B., Troutman, G. C., & Arrington, J. M. (1992). Students with learning disabilities in the university environment: A study of faculty and student perceptions. *Journal of Learning Disabilities, 25*(10), 678–684. <https://doi-org.ezproxy.baylor.edu/10.1177/002221949202501008>
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*(1), 1–55. <http://dx.doi.org/10.1080/10705519909540118>



- Hua, J., Johnson, A. E., Hussain, M., & Howell, J. L. (2022). Associations between perceived everyday discrimination and health among college students at a Hispanic-serving institution. *Journal of Health Psychology*, 13591053221083739–13591053221083739. <https://doi.org/10.1177/13591053221083739>
- Hurtado, S., Cuellar, M., & Wann, C. G. (2011). Quantitative measures of students' sense of validation: Advancing the study of diverse learning environments. *Enrollment Management Journal*, 53-71.
- Hurtado, S., Ruiz Alvarado, A., & Guillermo-Wann, C. (2015). Creating inclusive environments: The mediating effect of faculty and staff validation on the relationship of discrimination/bias to students' sense of belonging. *JCScore*, 1(1), 59–81. <https://doi.org/10.15763/issn.2642-2387.2015.1.1.59-81>
- Hwang, W.-C., & Goto, S. (2008). The impact of perceived racial discrimination on the mental health of Asian American and Latino college students. *Cultural Diversity and Ethnic Minority Psychology*, 14(4), 326–335. <https://doi-org.ezproxy.baylor.edu/10.1037/1099-9809.14.4.326>
- Inman, E. M., Bermejo, R. M., McDanal, R., Nelson, B., Richmond, L. L., Schleider, J. L., & London, B. (2021). Discrimination and psychosocial engagement during the COVID-19 pandemic. *Stigma and Health*, 6(4), 380–383. <https://doi-org.ezproxy.baylor.edu/10.1037/sah0000349>
- Jochman, J. C., Cheadle, J. E., Goosby, B. J., Tomaso, C., Kozikowski, C., & Nelson, T. (2019). Mental health outcomes of discrimination among college students on a predominately White campus: A prospective study. *Socius: Sociological Research for a Dynamic World*, 5, 237802311984272. <https://doi.org/10.1177/2378023119842728>
- Johnston-Guerrero, M. P. (2016). Embracing the messiness: critical and diverse perspectives on racial and ethnic identity development: Embracing the messiness. *New Directions for Student Services*, 2016(154), 43–55. <https://doi.org/10.1002/ss.20174>
- Jones, R. (2018). The student experience of undergraduate students: Towards a conceptual framework. *Journal of Further and Higher Education*, 42(8), 1040–1054. <https://doi.org/10.1080/0309877X.2017.1349882>
- Jones, K. P., Arena, D. F., Nittrouer, C. L., Alonso, N. M., & Lindsey, A. P. (2017). Subtle discrimination in the workplace: A vicious cycle. *Industrial and Organizational Psychology*, 10(1), 51–76. <https://doi.org/10.1017/iop.2016.91>

- Jones, C. A., & Greene, H. T. (2016). Race discrimination, racial socialization, and offending trends among African American college students: A test of the theory of African American offending. *Journal of Contemporary Criminal Justice*, 32(1), 60–77. <https://doi-org.ezproxy.baylor.edu/10.1177/1043986215607255>
- Juang, L., Ittel, A., Hoferichter, F., & Gallarin, M. (2016). Perceived racial/ethnic discrimination and adjustment among ethnically diverse college students: Family and peer support as protective factors. *Journal of College Student Development*, 57(4), 380–394. <https://doi-org.ezproxy.baylor.edu/10.1353/csd.2016.0048>
- Kandula, N. R., Hasnain-Wynia, R., Thompson, J. A., Brown, E. R., & Baker, D. W. (2009). Association between prior experiences of discrimination and patients' attitudes towards health care providers collecting information about race and ethnicity. *Journal of General Internal Medicine*, 24(7), 789–794. <https://doi.org/10.1007/s11606-009-0991-z>
- Karuppan, C. M., & Barari, M. (2010). Perceived discrimination and international students' learning: An empirical investigation. *Journal of Higher Education Policy and Management*, 33(1), 67–83. <https://doi.org/10.1080/1360080X.2011.537013>
- Kessler, R. C., Barker, P. R., Colpe, L. J., Epstein, J. F., Gfroerer, J. C., Hiripi, E., ... Zaslavsky, A. M. (2003). Screening for serious mental illness in the general population. *Archives of General Psychiatry*, 60(2), 184–189.
- Kessler, R. C., Mickelson, K. D., & Williams, D. R. (1999). The prevalence, distribution, and mental health correlates of perceived discrimination in the United States. *Journal of Health and Social Behavior*, 40(3), 208–230. <https://doi-org.ezproxy.baylor.edu/10.2307/2676349>
- Kim, H.-J., Jen, S., & Fredriksen-Goldsen, K. I. (2017). Race/ethnicity and health-related quality of life among LGBT older adults. *The Gerontologist*, 57(suppl 1), S30–S39. <https://doi.org/10.1093/geront/gnw172>
- King, K. R. (2003). Racism or sexism? Attributional ambiguity and simultaneous membership in multiple oppressed groups. *Journal of Applied Social Psychology*, 33(2), 223–247. <https://doi.org/10.1111/j.1559-1816.2003.tb01894.x>
- Lanaway, D., & Burlew, A. K. (2021). The influence of distressed coping on the relationship between perceived racial discrimination and cannabis use among Black college students. *Journal of Psychoactive Drugs*, 53(5), 404–412. <https://doi-org.ezproxy.baylor.edu/10.1080/02791072.2021.1990443>

- Landrine, H., Klonoff, E. A., Corral, I., Fernandez, S., & Roesch, S. (2006). Conceptualizing and measuring ethnic discrimination in health research. *Journal of Behavioral Medicine, 29*(1), 79–94. <https://doi-org.ezproxy.baylor.edu/10.1007/s10865-005-9029-0>
- Le, T. P., & Iwamoto, D. K. (2019). A longitudinal investigation of racial discrimination, drinking to cope, and alcohol-related problems among underage Asian American college students. *Psychology of Addictive Behaviors, 33*(6), 520–528. <https://doi-org.ezproxy.baylor.edu/10.1037/adb0000501>
- Le, T. P., Iwamoto, D. K., & Burke, L. A. (2021). A longitudinal investigation of racial discrimination, distress intolerance, and psychological well-being in African American college students. *Journal of Clinical Psychology, 77*(3), 745–754. <https://doi-org.ezproxy.baylor.edu/10.1002/jclp.23054>
- Leeper, C., & Starr, C. R. (2019). Helping and hindering undergraduate women’s STEM motivation: Experiences with STEM encouragement, STEM-related gender bias, and sexual harassment. *Psychology of Women Quarterly, 43*(2), 165–183. <https://doi.org/10.1177/0361684318806302>
- Lett, K., Tamaian, A., & Klest, B. (2020). Impact of ableist microaggressions on university students with self-identified disabilities. *Disability & Society, 35*(9), 1441–1456. <https://doi-org.ezproxy.baylor.edu/10.1080/09687599.2019.1680344>
- Lewis, T. T., Yang, F. M., Jacobs, E. A., & Fitchett, G. (2012). Racial/ethnic differences in responses to the everyday discrimination scale: A differential item functioning analysis. *American Journal of Epidemiology, 175*(5), 391–401. <https://doi.org/10.1093/aje/kwr287>
- Li, X., Kim, Y. H., Keum, B. T. H., Wang, Y.-W., & Bishop, K. (2021). A broken pipeline: Effects of gender and racial/ethnic barriers on college students’ educational aspiration–pursuit gap. *Journal of Career Development, 1*–16. <https://doi.org/10.1177/0894845321994196>
- Lowe, S. R., Tineo, P., & Young, M. N. (2019). Perceived discrimination and major depression and generalized anxiety symptoms: In Muslim American college students. *Journal of Religion and Health, 58*(4), 1136–1145. <https://doi.org/10.1007/s10943-018-0684-1>
- Lui, P. P. (2020). Racial microaggression, overt discrimination, and distress: (In)direct associations with psychological adjustment. *The Counseling Psychologist, 48*(4), 551–582. <https://doi-org.ezproxy.baylor.edu/10.1177/0011000020901714>
- Lui, P. P., & Quezada, L. (2019). Associations between microaggression and adjustment outcomes: A meta-analytic and narrative review. *Psychological Bulletin, 145*(1), 45–78. <http://dx.doi.org/10.1037/bul0000172>

- Lyman, M., Beecher, M. E., Griner, D., Brooks, M., Call, J., & Jackson, A. (2016). What keeps students with disabilities from using accommodations in postsecondary education? A qualitative review. *Journal of Postsecondary Education and Disability, 29*, 123-140.
- Mathies, N., Coleman, T., McKie, R. M., Woodford, M. R., Courtice, E. L., Travers, R., & Renn, K. A. (2019). Hearing “that’s so gay” and “no homo” on academic outcomes for LGBTQ + college students. *Journal of LGBT Youth, 16*(3), 255–277. <https://doi.org/10.1080/19361653.2019.1571981>
- McDermott, R. C., Berry, A. T., Borgogna, N. C., Cheng, H.-L., Wong, Y. J., Browning, B., & Carr, N. (2020). Revisiting the paradox of hope: The role of discrimination among first-year Black college students. *Journal of Counseling Psychology, 67*(5), 637–644. <https://doi-org.ezproxy.baylor.edu/10.1037/cou0000422.supp>
- McKinney, J. S. (2005). On the margins: A study of the experiences of transgender college students. *Journal of Gay & Lesbian Issues in Education, 3*(1), 63-76.
- Mennicke, A., Geiger, E., & Brewster, M. (2020). Interpersonal violence prevention considerations for sexual minority college students: Lower campus connection, worse perceptions of institutional support, and more accurate understandings of sexual consent. *Journal of Family Violence, 35*(6), 589–601. <https://doi.org/10.1007/s10896-019-00089-5>
- Meyer, I. H. (2003). Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. *Psychological Bulletin, 129*(5), 674–697. <http://dx.doi.org/10.1037/0033-2909.129.5.674>
- Meyer, I. H., Ouellette, S. C., Haile, R., & McFarlane, T. A. (2011). “We’d be free”: Narratives of life without homophobia, racism, or sexism. *Sexuality Research and Social Policy, 8*(3), 204–214. <https://doi.org/10.1007/s13178-011-0063-0>
- Nadal, K. L., Griffin, K. E., Wong, Y., Hamit, S., & Rasmus, M. (2014). The impact of racial microaggressions on mental health: Counseling implications for clients of color. *Journal of Counseling & Development, 92*(1), 57–66. <https://doi-org.ezproxy.baylor.edu/10.1002/j.1556-6676.2014.00130.x>
- National Center for Education Statistics. (2022, May). *Postsecondary education: Undergraduate enrollment*. <https://nces.ed.gov/programs/coe/indicator/cha/undergrad-enrollment#suggested-citation>
- Nguyen, T. H., Han, H. R., Kim, M. T., & Chan, K. S. (2014). An introduction to item response theory for patient-reported outcome measurement. *Patient, 7*(1), 23–35. <https://doi.org/10.1007/s40271-013-0041-0>

- Nuttall, F. Q. (2015). Body mass index: Obesity, BMI, and health: A critical review. *Nutrition Today (Annapolis)*, *50*(3), 117–128. <https://doi.org/10.1097/NT.0000000000000092>
- Office of Institutional Research. (2021, June 21). *2020-2021 common data set for Baylor University*. <https://www.baylor.edu/ir/doc.php/373996.pdf>
- Okagaki, L., Frensch, P. A., & Dodson, N. E. (1996). Mexican American children's perceptions of self and school achievement. *Hispanic Journal of Behavioral Sciences*, *18*(4), 469-484.
- Okagaki, L., Helling, M.K., & Bingham, G.E. (2009). American Indian college students' ethnic identity and beliefs about education. *Journal of College Student Development*, *50*(2), 157-176. doi:10.1353/csd.0.0060
- Paradies, Y., Ben, J., Denson, N., Elias, A., Priest, N., Pieterse, A., . . . Gee, G. (2015). Racism as a determinant of health: A systematic review and meta-analysis. *PLoS ONE*, *10*(9), e0138511. <http://dx.doi.org/10.1371/journal.pone.0138511>
- Park, J. J., Kim, Y. K., Salazar, C., & Eagan, M. K. (2018, November). *Discrimination and student-faculty interaction in STEM: Exploring the impact for students of different races* [Conference session]. Association for the Study of Higher Education, Tampa, Florida. <https://par.nsf.gov/servlets/purl/10096892>
- Pascoe, E. A., & Smart Richman, L. (2009). Perceived discrimination and health: A meta-analytic review. *Psychological Bulletin*, *135*, 531–554. <http://dx.doi.org/10.1037/a0016059>
- Pavalko, E. K., Mossakowski, K. N., & Hamilton, V. J. (2003). Does perceived discrimination affect health? Longitudinal relationships between work discrimination and women's physical and emotional health. *Journal of Health and Social Behavior*, *44*(1), 18–33. <https://doi.org/10.2307/1519813>
- Pew Research Center. (n.d.). *Religious landscape study: College graduates*. <https://www.pewresearch.org/religion/religious-landscape-study/educational-distribution/college/>
- Pike, G. R. (1995). The relationship between self reports of college experiences and achievement test scores. *Research in Higher Education*, *36*(1), 1–21. <https://doi.org/10.1007/BF02207764>
- Pike, G. R. (1996). Limitations of using students' self-reports of academic development as proxies for traditional achievement measures. *Research in Higher Education*, *37*(1), 89–114. <https://doi.org/10.1007/BF01680043>

- Pike, G. R. (1999). The constant error of the halo in educational outcomes research. *Research in Higher Education, 40*(1), 61–86. <https://doi.org/10.1023/A:1018774311468>
- Pike, G. R. (2011). Using college students' self-reported learning outcomes in scholarly research. *New Directions for Institutional Research, 2011*(150), 41–58. <https://doi.org/10.1002/ir.388>
- Pinel, E. C. (1999). Stigma consciousness: The psychological legacy of social stereotypes. *Journal of Personality and Social Psychology, 76*(1), 114–128. <https://doi.org/10.1037/0022-3514.76.1.114>
- Pintrich, P. R., & De Groot, E. V. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology, 82*(1), 33–40.
- Prelow, H. M., Mosher, C. E., & Bowman, M. A. (2006). Perceived racial discrimination, social support, and psychological adjustment among African American college students. *Journal of Black Psychology, 32*(4), 442–454. <https://doi.org/10.1177/0095798406292677>
- Putnick, D. L., & Bornstein, M. H. (2016). Measurement invariance conventions and reporting: The state of the art and future directions for psychological research. *Developmental Review, 41*, 71–90. <https://doi-org.ezproxy.baylor.edu/10.1016/j.dr.2016.06.004>
- Reeve, B. B., Willis, G., Shariff-Marco, S. N., Breen, N., Williams, D. R., Gee, G. C., Alegria, M., Takeuchi, D. T., Kudela, M. S., & Levin, K. Y. (2011). Comparing cognitive interviewing and psychometric methods to evaluate a racial/ethnic discrimination scale. *Field Methods, 23*(4), 397–419. <https://doi.org/10.1177/1525822X11416564>
- Rendon, L. I. (1994). Validating culturally diverse students: Toward a new model of learning and student development. *Innovative Higher Education, 19*(1), 33–51.
- Renn, K. A., & Arnold, K. D. (2003). Reconceptualizing research on college student peer culture. *The Journal of Higher Education, 74*(3), 261–291. <https://doi.org/10.1353/jhe.2003.0025>
- Rippy, A. E., & Newman, E. (2006). Perceived religious discrimination and its relationship to anxiety and paranoia among Muslim Americans. *Journal of Muslim Mental Health, 1*(1), 5–20. <https://doi-org.ezproxy.baylor.edu/10.1080/15564900600654351>

- Rivers, A. S., & Sanford, K. (2020). When we say “perceived support,” what do we mean? Contexts and components of support among people with serious medical conditions. *Journal of Social and Personal Relationships*, 37(10-11), 2758–2778. <https://doi.org/10.1177/0265407520937350>
- Rivers, A. S., & Sanford, K. (2021). Interpersonal resilience inventory: Assessing positive and negative interactions during hardships and COVID -19. *Personal Relationships*, 28(2), 316–336. <https://doi.org/10.1111/pere.12362>
- Rizopoulos, D. (2006). ltm: An R package for latent variable modeling and item response theory analyses. *Journal of Statistical Software*, 17(5), 1–25. <http://dx.doi.org/10.18637/jss.v017.i05>
- Rosseel, Y. (2012). Lavaan: An R package for structural equation modeling. *Journal of Statistical Software*, 48(2), 1–36. <https://doi.org/10.18637/jss.v048.i02>
- Samejima, F. (1969). *Estimation of latent ability using a response pattern of graded scores*. Byrd Press.
- Sanford, K., & Pizzuto, A. E. (2022). The healthcare discrimination experience scale: Assessing a variable crucial for explaining racial/ethnic inequities in patient activation and health. *Journal of Racial and Ethnic Health Disparities*, 1-11. <https://doi.org/10.1007/s40615-022-01350-2>
- Sanford, K., & Rivers, A. S. (2020). Treatment adherence perception questionnaire: Assessing patient perceptions regarding their adherence to medical treatment plans. *Psychological Assessment*, 32(3), 227–238. <https://doi-org.ezproxy.baylor.edu/10.1037/pas0000782.supp>
- Scheitle, C. P., & Ecklund, E. H. (2020). Individuals’ experiences with religious hostility, discrimination, and violence: Findings from a new national survey. *Socius*, 6, 1–15. <https://doi.org/10.1177/2378023120967815>
- Schmidt, C. K., Miles, J. R., & Welsh, A. C. (2011). Perceived discrimination and social support: The influences on career development and college adjustment of LGBT college students. *Journal of Career Development*, 38(4), 293–309. <https://doi.org/10.1177/0894845310372615>
- Seelman, K. L., Woodford, M. R., & Nicolazzo, Z. (2017). Victimization and microaggressions targeting LGBTQ college students: Gender identity as a moderator of psychological distress. *Journal of Ethnic & Cultural Diversity in Social Work: Innovation in Theory, Research & Practice*, 26(1–2), 112–125. <https://doi-org.ezproxy.baylor.edu/10.1080/15313204.2016.1263816>

- Serpas, D.G. (2023). The buffering effect of intrinsic value orientation on the relationship between everyday discrimination and mental health symptoms among Hispanic/Latinx undergraduates. *Journal of Hispanic Higher Education*, 22(1), 33–45. <https://doi.org/10.1177/15381927211006249>
- Shariff-Marco, S., Breen, N., Landrine, H., Reeve, B. B., Krieger, N., Gee, G. C., Williams, D. R., Mays, V. M., Ponce, N. A., Alegría, M., Liu, B., Willis, G., & Johnson, T. P. (2011). Measuring everyday racial/ethnic discrimination in health surveys: How best to ask the questions, in one or two stages, across multiple racial/ethnic groups? *Du Bois Review*, 8(1), 159–177. <https://doi.org/10.1017/S1742058X11000129>
- Silverschanz, P., Cortina, L. M., Konik, J., & Magley, V. J. (2008). Slurs, snubs, and queer jokes: Incidence and impact of heterosexist harassment in academia. *Sex Roles*, 58(3–4), 179–191. <https://doi.org/10.1007/s11199-007-9329-7>
- Simone, M., Pisetsky, E. M., & Lust, K. (2020). Weight discrimination inflates psychological health risk and academic impairment in sexual minority cisgender college students relative to their heterosexual peers. *Eating Disorders: The Journal of Treatment & Prevention*. <https://doi-org.ezproxy.baylor.edu/10.1080/10640266.2020.1763111>
- Skinner, E. A., Kindermann, T. A., & Furrer, C. J. (2009). A motivational perspective on engagement and disaffection: Conceptualization and assessment of children’s behavioral and emotional participation in academic activities in the classroom. *Educational and Psychological Measurement*, 69(3), 493–525. <https://doi.org/10.1177/0013164408323233>
- Smalls, C., White, R., Chavous, T., & Sellers, R. (2007). Racial ideological beliefs and racial discrimination experiences as predictors of academic engagement among African American adolescents. *Journal of Black Psychology*, 33(3), 299–330. <https://doi.org/10.1177/0095798407302541>
- Sniatecki, J. L., Perry, H. B., & Snell, L. H. (2015). Faculty attitudes and knowledge regarding college students with disabilities. *Journal of Postsecondary Education and Disability*, 28, 259–275.
- Speyer, E., Morgenstern, H., Hayashino, Y., Kerr, P. G., Rayner, H., Robinson, B. M., & Pisoni, R. L. (2016). Reliability and validity of the coping strategy inventory-short form applied to hemodialysis patients in 13 countries: Results from the Dialysis Outcomes and Practice Patterns Study (DOPPS). *Journal of Psychosomatic Research*, 91, 12–19. <https://doi.org/10.1016/j.jpsychores.2016.08.015>



- Staples, L. G., Dear, B. F., Gandy, M., Fogliati, V., Fogliati, R., Karin, E., Nielsse, O., & Titov, N. (2019). Psychometric properties and clinical utility of brief measures of depression, anxiety, and general distress: The PHQ-2, GAD-2, and K-6. *General Hospital Psychiatry, 56*, 13–18. <https://doi.org/10.1016/j.genhosppsych.2018.11.003>
- Steiger, J. H. (1980). Tests for comparing elements of a correlation matrix. *Psychological Bulletin, 87*(2), 245–251. <https://doi-org.ezproxy.baylor.edu/10.1037/0033-2909.87.2.245>
- Stevens, C., Liu, C.H., & Chen, J.A. (2018). Racial/ethnic disparities in US college students' experience: Discrimination as an impediment to academic performance. *Journal of American College Health, 66*(7), 665-673. <https://doi.org/10.1080/07448481.2018.1452745>
- Suh, H. N., Flores, L. Y., & Wang, K. T. (2019). Perceived discrimination, ethnic identity, and mental distress among Asian international students in Korea. *Journal of Cross-Cultural Psychology, 50*(8), 991–1007. <https://doi-org.ezproxy.baylor.edu/10.1177/0022022119874433>
- Swim, J. K., Hyers, L. L., Cohen, L. L., Fitzgerald, D. C., & Bylsma, W. H. (2003). African American college students' experiences with everyday racism: Characteristics of and responses to these incidents. *Journal of Black Psychology, 29*(1), 38–67. <https://doi.org/10.1177/0095798402239228>
- Szymanski, D. M. (2009). Examining potential moderators of the link between heterosexist events and gay and bisexual men's psychological distress. *Journal of Counseling Psychology, 56*, 142–151. <http://dx.doi.org/10.1037/0022-0167.56.1.142>
- Szymanski, D. M., & Balsam, K. F. (2011). Insidious trauma: Examining the relationship between heterosexism and lesbians' PTSD symptoms. *Traumatology, 17*(2), 4–13. <https://doi.org/10.1177/1534765609358464>
- Szymanski, D. M., & Lewis, J. A. (2016). Gendered racism, coping, identity centrality, and African American college women's psychological distress. *Psychology of Women Quarterly, 40*(2), 229–243. <https://doi.org/10.1177/0361684315616113>
- Taylor, R. D., Casten, R., Flickinger, S. M., Roberts, D., & Fulmore, C. D. (1994). Explaining the school performance of African-American adolescents. *Journal of Research on Adolescence (Lawrence Erlbaum), 4*(1), 21–44. [https://doi.org/10.1207/s15327795jra0401\\_3](https://doi.org/10.1207/s15327795jra0401_3)

- Tineo, P., Lowe, S. R., Reyes-Portillo, J. A., & Fuentes, M. A. (2021). Impact of perceived discrimination on depression and anxiety among Muslim college students: The role of acculturative stress, religious support, and Muslim identity. *American Journal of Orthopsychiatry*. <https://doi-org.ezproxy.baylor.edu/10.1037/ort0000545>
- Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition* (2nd ed.). University of Chicago Press.
- Tobin, D. L., Holroyd, K. A., & Reynolds, R. V. (1984). *User's manual for the Coping Strategies Inventory*. Ohio University, Department of Psychology.
- Tobin, D. L., Holroyd, K. A., Reynolds, R. V., & Wigal, J. K. (1989). The hierarchical factor structure of the coping strategies inventory. *Cognitive Therapy and Research*, *13*(4), 343–361. <https://doi.org/10.1007/BF01173478>
- Urbina, S. (2014). *Essentials of psychological testing* (2nd ed.). John Wiley & Sons.
- Utsey, S. O., Ponterotto, J. G., Reynolds, A. L., & Cancelli, A. A. (2000). Racial discrimination, coping, life satisfaction, and self-esteem among African Americans. *Journal of Counseling & Development*, *78*(1), 72–80. <https://doi.org/10.1002/j.1556-6676.2000.tb02562.x>
- Villegas-Gold, R., & Yoo, H. C. (2014). Coping with discrimination among Mexican American college students. *Journal of Counseling Psychology*, *61*(3), 404–413. <https://doi.org/10.1037/a0036591>
- Vuong, M., Brown-Welty, S., & Tracz, S. (2010). The effects of self-efficacy on academic success of first-generation college sophomore students. *Journal of College Student Development*, *51*(1), 50–64. <https://doi-org.ezproxy.baylor.edu/10.1353/csd.0.0109>
- Waldo, C. R., Hesson-McInnis, M. S., & D'Augelli, A. R. (1998). Antecedents and consequences of victimization of lesbian, gay, and bisexual young people: A structural model comparing rural university and urban samples. *American Journal of Community Psychology*, *26*(2), 307–334. <https://doi.org/10.1023/A:1022184704174>
- Wann, C. G. (2013). *(Mixed) race matters: Racial theory, classification, and campus climate* (Order No. 3548168). [Doctoral dissertation, University of California, Los Angeles]. ProQuest Dissertations and Theses Global.
- West, M., Kregel, J., Getzel, E. E., Zhu, M., Ipsen, S. M., & Martin, E. D. (1993). Beyond Section 504: Satisfaction and empowerment of students with disabilities in higher education. *Exceptional Children*, *59*(5), 456–467.

- Wester, E. R., Walsh, L. L., Arango-Caro, S., & Callis-Duehl, K. L. (2021). Student engagement declines in STEM undergraduates during COVID-19–driven remote learning. *Journal of Microbiology & Biology Education*, 22(1), 1–11. <https://doi.org/10.1128/JMBE.V22I1.2385>
- Williams, D. P., Pandya, K. D., Hill, L. K., Kemp, A. H., Way, B. M., Thayer, J. F., & Koenig, J. (2019). Rumination moderates the association between resting high-frequency heart rate variability and perceived ethnic discrimination. *Journal of Psychophysiology*, 33(1), 13–21. <https://doi-org.ezproxy.baylor.edu/10.1027/0269-8803/a000201>
- Williams, D. R., Lawrence, J. A., Davis, B. A., & Vu, C. (2019). Understanding how discrimination can affect health. *Health Services Research*, 54(S2), 1374–1388. <https://doi.org/10.1111/1475-6773.13222>
- Williams, D. R., Yu, Y., Jackson, J. S., & Anderson, N. B. (1997). Racial differences in physical and mental health. *Journal of Health Psychology*, 2(3), 335–351. <https://doi.org/10.1177/135910539700200305>
- Woodford, M. R., Han, Y., Craig, S., Lim, C., & Matney, M. M. (2014). Discrimination and mental health among sexual minority college students: The type and form of discrimination does matter. *Journal of Gay & Lesbian Mental Health*, 18(2), 142–163. <https://doi.org/10.1080/19359705.2013.833882>
- Woodford, M. R., Kulick, A., & Atteberry, B. (2015). Protective factors, campus climate, and health outcomes among sexual minority college students. *Journal of Diversity in Higher Education*, 8(2), 73–87. <https://doi.org/10.1037/a0038552>
- Wu, H., & Estabrook, R. (2016). Identification of confirmatory factor analysis models of different levels of invariance for ordered categorical outcomes. *Psychometrika*, 81(4), 1014–1045. <https://doi-org.ezproxy.baylor.edu/10.1007/s11336-016-9506-0>
- Yang, T.-C., Chen, I.-C., Choi, S., & Kurtulus, A. (2019). Linking perceived discrimination during adolescence to health during mid-adulthood: Self-esteem and risk-behavior mechanisms. *Social Science & Medicine*, 232, 434–443. <https://doi-org.ezproxy.baylor.edu/10.1016/j.socscimed.2018.06.012>
- Zhao, C. M., Kuh, G. D., & Carini, R. M. (2005). A comparison of international student and American student engagement in effective educational practices. *The Journal of Higher Education (Columbus)*, 76(2), 209–231. <https://doi.org/10.1353/jhe.2005.0018>

Zhu, J., Xie, R., Chen, Y., & Zhang, W. (2019). Relationship between parental rejection and problematic mobile phone use in Chinese university students: Mediating roles of perceived discrimination and school engagement. *Frontiers in Psychology, 10*, 1–10. <https://doi-org.ezproxy.baylor.edu/10.3389/fpsyg.2019.00428>