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Perceived discrimination and mental health outcomes in college students: the mediating role of preventive health behaviors and social support

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PERCEIVED DISCRIMINATION AND MENTAL HEALTH OUTCOMES IN COLLEGE
STUDENTS: THE MEDIATING ROLE OF PREVENTIVE HEALTH BEHAVIORS AND
SOCIAL SUPPORT

A thesis submitted in partial fulfillment of the requirements for the degree of Master of
Science at Virginia Commonwealth University.

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Abstract

PERCEIVED DISCRIMINATION AND MENTAL HEALTH OUTCOMES IN COLLEGE STUDENTS: THE MEDIATING ROLE OF PREVENTIVE HEALTH BEHAVIORS AND SOCIAL SUPPORT

By Sarah Morton, M.S.

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Perceived discrimination has been linked to adverse mental health outcomes, increased risk-taking behaviors, and poor engagement in health promoting behaviors. College students may be especially susceptible to negative mental health outcomes associated with discrimination due to the unique stressors faced by young adults (e.g., prolonged transition to adulthood, onset of mental health disorders, changes in social support). The current study examined the mediating and moderating roles of health behaviors and social support on the association between perceived discrimination and mental health outcomes (e.g., anxiety, depression, suicidality) in college students. A total of 709 college students (42.8% White; 72.2% female; 30.2% first-generation) from a large urban university completed online questionnaires including: the Everyday Discrimination Scale (EDS), Hopkins Symptom Checklist (HSCL-25), Suicidal Behavior Questionnaire-14 (SBQ-14), Health Behaviors Checklist (HBCL), and Interpersonal Support Evaluation List (ISEL-College Version). To examine study aims, moderation and parallel mediation analyses were conducted in PROCESS SPSS macro version 4.0. Results indicated that preventive health behaviors and social support partially mediated the association between discrimination and mental health outcomes. Findings additionally suggested that first-

and continuing-generation students may experience different impacts on health behavior associated with discrimination. Our findings lend support to the generalizability of certain elements of the discrimination-health model in college students reporting on a wider variety of discrimination experiences. Further examination of the discrimination-health model in first- and continuing-generation students may be warranted to better inform the ways that discrimination may uniquely impact health behavior in these populations.

Perceived discrimination and mental health outcomes in college students: the impact of

health behaviors and social support

Recent years of constant sociopolitical strife have led to an increase in the visibility of overt acts of discrimination, as well as generated discussions about the continued existence of less visible forms of covert discrimination (U.S. Department of Justice [DOJ], 2020; Horowitz et al., 2021). While institutes of higher learning strive to address issues of discrimination through diversity, equity, and inclusion initiatives, a significant number of US college students continue to report experiences of discrimination on campus (Stevens et al., 2018; Bravo et al., 2021). These experiences range from overt acts of discrimination such as bias-motivated acts of assault and defacement of property with targeted messages of hate, to more subtle (yet harmful) acts like microaggressions or nonverbal body language during social interactions (Bravo et al., 2021; DOJ, 2020). Chronic exposure to these forms of overt and covert discrimination has been linked to devastating long-term effects on mental and physical health outcomes in college students (Bravo et al., 2021; Woodford et al., 2018).

Research in minoritized adult populations has shown that protective factors, such as a strong perception of social support and active coping styles, may mitigate some of the negative mental and physical health outcomes associated with discrimination (Yoshikawa et al., 2004; Ajrouch et al., 2010; Bianchi et al., 2004). Over the years, researchers have sought to develop models that illustrate the pathways linking discrimination, social support, and health outcomes. Results of these efforts have highlighted health behaviors (e.g., risk-taking behaviors, such as using nicotine products; health promoting behaviors, such as completing annual wellness exams) as potential mediating factors in the association between discrimination and health outcomes (Pascoe & Richman, 2009). For example, it has been proposed that the increased substance use

associated with discrimination experiences occurs as a function of lowered self-control and attempts to cope with resulting negative affect and cognition (Pascoe & Richman, 2009; Hatzenbuehler et al., 2011). While using substances like alcohol may temporarily alleviate psychological distress, increased use may lead to dependence and/or impact physiological functioning to a degree that exacerbates or even elicits depressive symptoms (National Health and Medical Research Council, 2020). Experiences of discrimination may also negatively impact engagement in health promoting behaviors. Specifically, research suggests that perceived discrimination may lead to less trust in healthcare systems, negative perceptions of quality of care, lower rates of treatment adherence, and delayed care-seeking that ultimately impact health outcomes (i.e., mental and physical health) (Williams et al., 2019).

Social support has been identified as another influencing factor in the association between perceived discrimination and mental health outcomes, and is thought to moderate associations between discrimination, health behavior, and mental health outcomes (Pascoe & Richman, 2009). In terms of social support's direct influence on health behavior and outcomes, high social support has been positively associated with psychological well-being and adjustment in college students (Juang et al., 2016), while social isolation has been generally linked to increased engagement in harmful health behaviors (e.g., substance use) (Taylor, 2011). In the context of both high and low levels of discrimination, family and peer support have been shown to mitigate discrimination's impact on various mental health outcomes (e.g., somatization, psychological distress, depression), as well as reduce risky health behaviors associated with discrimination (e.g., decreased engagement in risky sexual behavior) (Steers et al., 2019; Juang et al., 2016; Ajrouch et al., 2010; Yoshikawa et al., 2004). However, as will be reviewed in a later section, studies examining social support as a protective factor in college student

populations have yielded inconsistent findings (Prelow et al., 2006; Shi., 2021; Juang et al., 2016), suggesting the need for further inquiry.

Theoretical models examining associations among discrimination, social support, health behaviors, and health outcomes are somewhat limited in that they consist primarily of samples reporting on racial and ethnic discrimination (Pascoe & Richman, 2009; Williams et al., 2019; Yang et al., 2019), and have not been adequately examined in college student populations. Evaluation of these theories in college students is vital given that this period of the lifespan is associated with unique changes and impairments in key variables of the conceptual models (e.g., higher risk-taking health behaviors, lower engagement in health care, changes in social supports). Thus, the current study tested elements of theorized pathways between perceived discrimination and mental health (e.g., model described by Pascoe & Richman, 2009) in a sample of college students. Specifically, the current study examined the role of mediating (health behaviors and social support) and moderating (social support) variables to evaluate their effects on the association between perceived discrimination and mental health outcomes.

Perceived Discrimination

To assess the experience of discrimination among college students in the current study, self-report measures of perceived discrimination were used rather than examining external indicators of discrimination (e.g., observation of an individual experiencing a discriminatory event). Perceived discrimination is often defined in the literature as the subjective evaluation that an experience includes a "behavioral manifestation of a negative attitude, judgment, or unfair treatment towards members of a group" (Pascoe & Richman, 2009, p. 3). In other words, it is conceptualized as the subjective experience of stress associated with the evaluation that a discrimination event has occurred (Clark et al., 1999; Williams et al., 2003). Thus, as established

in social stress theory, perceived discrimination may be treated as a specific type of stress resulting in similar negative health outcomes as other psychological stressors (Williams et al., 2019; Anderson, 2013).

The developmental period of young adulthood (18-26 years) is fraught with psychological stressors. The transition to young adulthood is a challenging period in the lifespan filled with neurological and hormonal changes, as well as changes in social and legal statuses (Leebens & Williamson, 2017). Given the upheaval associated with this period, it comes as no surprise that nearly one-fifth of transitional young adults experience mental health issues, and that roughly two-thirds of these individuals do not receive treatment (Committee on Improving the Health, Safety, and Well-Being of Young Adults [CIHSWBYA] et al., 2015; Leebens & Williamson, 2017). In addition to mental health concerns, young adults, especially those from minoritized communities, often experience issues related to increased risk-taking, drastic changes in social relationships, lowered sleep quality, and lowered access to preventive medical care and treatment (McArdle et al., 2020; Leebens & Williamson, 2017; CIHSWBYA et al., 2015).

Moreover, it is estimated that 40% of young adults enroll in college almost immediately after completing high school (Leebens & Williamson, 2017). Oftentimes, this rapid transition is rife with additional hardships such as food insecurity, living away from home, increased psychological distress, and academic stressors (Willis, 2021; Leebens & Williamson, 2017; Conley et al., 2018). In addition to these hardships, college campuses have seen a 25% increase in hate crimes and bias-related incidents since 2015, with the vast majority of incidents being racially and/or ethnically motivated (Bhattacharya, 2018; National Center for Education Statistics, 2021). While crime statistic reports focus on overt acts of discrimination, many US

college students also continue to report more subtle everyday experiences of discrimination on campus (Stevens et al., 2018; Bravo et al., 2021).

This continued exposure to discrimination in college students has been linked to many of the same devastating long-term effects on mental and physical health outcomes seen in older adult populations (Bravo et al., 2021; Woodford et al., 2018). However, unlike their older adult counterparts, young adults are more likely to engage in risk-taking health behaviors and less likely to utilize health preventive strategies than older adults, all while experiencing changes that impact effective coping strategies (e.g., moving away from established social supports, disruption of routines, changes in cognitive-affective coping styles) (Conley et al., 2018; CIHSWBYA et al., 2015). Researchers studying this developmental period often attribute young adults' relatively poor health behaviors to factors such as the onset of mental health disorders, higher levels of psychological distress in college students relative to non-college attending adults, economic hardships, and prolonged transition to adulthood (Conley et al., 2018; CIHSWBYA et al., 2015). In particular, the prolonged transition to adulthood prevents young adults from engaging in activities that serve to reduce risky health behaviors, such as entering the workforce and beginning a family (Leebens & Williamson, 2017; CIHSWBYA et al., 2015). These factors combined make young adults potentially more vulnerable to negative health outcomes associated with the stressful experiences they will encounter, such as discrimination, during their time in college.

Recent studies have found that utilization of college resources (e.g., campus counseling services, student health) may lead to increased engagement in preventive health behaviors (e.g., sexually transmitted infections testing) and improved mental health outcomes (Eastman-Mueller et al., 2020; Minami et al., 2009). However, despite institutional efforts to increase support and

healthy behaviors, not all college students have equal access to their college's resources. Students may perceive stigma surrounding utilization of certain resources, lack awareness of their existence, be unable to afford networking/social experiences, or be ineligible for on-campus resources based on their enrollment status (e.g., not full-time students). This issue of unequal access to college resources is particularly salient for first-generation college students and may even play a role in exacerbating adjustment issues associated with young adulthood and the transition to college.

The Impact of Stress and Discrimination on Health Outcomes

While it is important to understand the unique stressors and behaviors exhibited by young college adults, it is equally important to understand *how* the stressors they experience, such as discrimination, impact health outcomes and behavior. To better capture the mechanisms through which stressors influence disease outcomes, Carver and Vargas (2011) synthesized previous research to develop a series of hypothetical psychophysiological pathways illustrating this process. In this theoretical model, exposure to stress-inducing situations results in the experience of negative affect (psychological distress). In the absence of effective coping strategies, this psychological distress may eventually manifest in the development of mental illnesses or sub-clinical levels of symptomology, and may also go on to impact physiological pathways that result in disease.

Perceived discrimination, like other psychological stressors, has the capacity to negatively influence physical and mental health outcomes. While the pathways outlined by Carver and Vargas (2011) provide a basis for conceptually understanding the influence of stress on disease outcomes, Pascoe and Richman's (2009) empirical model can be applied specifically to perceived discrimination and health outcomes research. In their model, discrimination is

shown to have direct effects on mental and physical health outcomes, stress responses, and health behaviors. Similar to the Carver and Vargas model (2011), Pascoe and Richman (2009) hypothesize that discrimination impacts physical and mental health outcomes through elevations in stress responses and changes in health behaviors. Additionally, factors such as social support, identification of stigma, and cognitive-affective coping styles may function to either mitigate or exacerbate stress and health behavior risk factors associated with discrimination.

The current study examined elements of Pascoe and Richman's (2009) discrimination-health model using mediation and moderation analyses. Mediators (such as stress responses and health behaviors help explain why an association exists between predictor and outcome variables. On the other hand, moderators (such as coping style), influence the strength or direction of an association between predictor and outcome variables. Based on unique challenges faced by college adults with regards to social changes and health behaviors, the current study examined the hypothesized role of health behaviors as a mediator in associations between discrimination and mental health outcomes. However, despite social support's role as a moderator in historical models, the current study examined it as both a moderator and mediator to accommodate the conflicting findings in recent literature which we discuss below.

Perceived Discrimination's Association with Mental and Physical Health

Prior to considering moderating and mediating factors, it is important to first establish that perceived discrimination does influence health outcomes. In fact, the link between stressful situations, psychological distress, and mental health outcomes has been well-established in the literature on perceived discrimination. As implied in the conceptual figures above, when an interaction is appraised as discriminatory, it is often associated with subsequent experiences of psychological distress (Williams et al., 2019; Williams et al., 2009; Kwate et al., 2003). Over

time, and with repeated exposure to discrimination, psychological distress can yield poor mental health outcomes, such as increased symptoms of depression, anxiety, and suicidality (Woodford et al., 2018; Bravo et al., 2021). In fact, a meta-analysis conducted by Pascoe and Richman (2009) found that perceived discrimination was an equally strong predictor across all types of mental health outcomes (i.e., not just depression and anxiety), with no significant differences across ethnicity or gender. Recent studies have continued to supply evidence that many forms of perceived discrimination (e.g., racial, ethnic, gender, sexual orientation) can even be linked to severe forms of mental illness, such as psychosis and suicidality across diverse samples (Pearce et al., 2019; Hong et al., 2018; Woodford et al., 2018). Given this link to suicidality, and the fact that an estimated 20% of college students endorse suicidal ideation (Liu et al., 2019), the current study also considered suicidality as a mental health outcome variable.

Similar negative effects of perceived discrimination have been documented for physical health outcomes as well. As described in the Carver and Vargas model (2011), chronic and intense stressful experiences can result in psychological distress that may impact physiological processes. Prolonged impairment or overactivation of certain physiological processes (e.g., HPA axis) may then result in the development or exacerbation of acute and/or chronic health conditions (Williams et al., 1981). The seminal work by Seeman and colleagues (1997) laid the groundwork for the link between psychological distress, physiological overactivation, and poor health outcomes by documenting the negative effects of allostatic load on aging. Reviews of the extant literature over the years have overwhelmingly shown that the stress associated with discrimination exerts a similar effect on the body. Perceived discrimination is currently linked to a substantial number of poor health outcomes including high blood pressure, cardiovascular disease, breast cancer, and adverse birth outcomes (Williams & Mohammed, 2009; Paradies,

2006; Williams et al., 2019). While racial and ethnic discrimination are the most commonly reported forms of discrimination, studies suggest that adverse health outcomes do not significantly vary based on discrimination type (Pascoe & Richman, 2009).

In line with previous studies, the current research posited that perceived discrimination would directly predict mental health outcomes (e.g., anxiety, depression, suicidality) in college students. However, given the robust data linking perceived discrimination and mental health outcomes, the current study went further and examined what mechanism (i.e., mediating effect) might be contributing to this association. Similar to the complex avenues linking perceived discrimination and disease outcomes, these indirect pathways also apply to mental health outcomes with evidence suggesting that health behaviors in particular play a pivotal role (Wickham et al., 2020). Given that college-aged adults exhibit worse health behaviors than older adults (Wickham et al., 2020; Leebens & Williamson, 2017; CIHSWBYA et al., 2015), the current study specifically focused on examining the mediating effect of health behaviors in the link between discrimination and mental health outcomes.

Health Behaviors and Perceived Discrimination

For the purposes of this study, health behaviors were defined by the Health Behaviors Questionnaire (Vickers et al., 1990), which measures engagement in various preventive behaviors (e.g., wellness maintenance, accident control) and risk-taking behaviors (e.g., traffic-related behavior, exposure to hazardous substances). In accordance with the Carver and Vargas model (2011), health behaviors can be conceptualized as a type of coping in response to stress. The experience of stress has been generally linked to increased engagement in risk-taking health behaviors and decreased engagement in preventive health behaviors (Carver & Vargas, 2011). In essence, research into these behavioral pathways suggest that negative health outcomes arise as a

product of the behaviors themselves rather than solely as a result of physiological changes in the body due to stress.

This is especially concerning given that discrimination is thought to result in lowered self-regulation (Inzlicht et al., 2006). Within the context of health behavior, this state of lowered self-regulation may translate to the lowered availability of energy and resources to reduce risk-taking behaviors (Pascoe & Richman, 2009). For example, perceived discrimination has been associated with higher risk of cigarette use and vaping (Unger, 2018; Fahey et al., 2021), increased alcohol and marijuana use (Looby et al., 2021), unhealthy eating and lowered physical activity, risky driving behaviors, and risky sexual behaviors (Sutin & Terracciano, 2017). These maladaptive health behaviors associated with perceived discrimination may lead to increased exposure to harmful agents and subsequently result in adverse health outcomes.

In addition to the negative effects of risky health behaviors, there is also the compounding effect of decreased engagement in preventive health behaviors. During times of stress (e.g., experiencing discrimination), individuals are more likely to struggle with adherence to medical regimens, seeking medical care, and engaging in a healthy diet and exercise routines (Carver & Vargas, 2011). As a result, an individual who may have developed an adverse health issue as a result of maladaptive stress coping (e.g., smoking) may put off seeking medical care resulting in delayed diagnosis and treatment. These avoidant behaviors often allow the condition to progress and the prognosis to worsen.

Health Behaviors and Mental Health

While the impact of health behaviors on physical health outcomes is evident, their effect on mental health is sometimes more ambiguous. Mental and physical health are heavily interconnected and have often been described as having a bidirectional relationship (Prince et al.,

2007). One main avenue through which physical health impacts mental health is the engagement in preventive and risk-taking health behaviors. For example, engagement in substance use can directly correspond to increased risk of substance abuse disorders. Other behaviors, though, operate through more indirect pathways to influence mental health.

A recent study of nursing students found that eating unhealthy foods and prolonged periods of sitting were associated with higher levels of depression and stress, while skipping meals was associated with higher levels of anxiety, depression, and stress (Stanton et al., 2021). Other studies have additionally linked smoking, poor sleep hygiene, and alcohol consumption with higher rates of depression and poor ratings of general well-being (Wickham et al., 2020; Buttery et al., 2015). While risk-taking behaviors can negatively impact mental health outcomes, engagement in preventive health behaviors serve to alleviate mental health symptoms. Eating fruits and vegetables, getting regular physical activity, not smoking, and positive sleep habits have all been found to reduce mental distress and improve mental health outcomes (Wickham et al., 2020; Buttery et al., 2015).

Given that perceived discrimination is linked to higher engagement in risk-taking behaviors and lower levels of preventive behaviors, and that poor health behaviors are linked to worse mental health outcomes, it is likely that health behaviors play a role in explaining how perceived discrimination impacts mental health outcomes. Based on the literature, the current study predicted that health behaviors would play a mediating role in the association between discrimination and mental health in college students. In other words, when experiencing discrimination, it was predicted that college students would engage in more risk-taking health behaviors (e.g., substance use) and fewer preventive health behaviors (e.g., attending a counseling appointment). Subsequently, it was predicted that this increase in maladaptive health

behaviors would contribute to an increase in poor mental health outcomes (e.g., suicidality, depression, anxiety).

Social Support's Impact on Health Outcomes and Behaviors

While it was predicted that higher levels of perceived discrimination would be linked to poor mental health outcomes through changes in health behaviors, there are moderating factors that may help buffer against associated mental health risks. Social support is generally defined as "the perception or experience that one is loved and cared for by others, esteemed and valued, and part of a social network of mutual assistance and obligations" (Wills, 1991, as cited in Taylor, 2011, p. 189). Cohen and Wills (1985) identified four distinct types of social support: appraisal (provision of information/feedback), tangible/instrumental (supplying materials or services), belonging/emotional (social companionship), and self-esteem (communication serving to enhance one's sense of value). Although some studies have assessed the individual impact of these four types of social support on the association between discrimination and health, the current study utilized a measure that assesses all four types to provide a more comprehensive picture.

Social support has been theorized to affect stress and health through both main and buffering effects. In main effects models, social support is thought to be beneficial during both low and high stress times. In the buffering effects hypothesis, social support has more health benefits during high stress situations and minimal impact during non-stressful intervals (Taylor, 2011; Cohen & Wills, 1985). The pathways through which social support has been linked to stress include both biological changes and behavioral changes in health habits. Specifically, it has been theorized that during times of high stress, social support buffers the impact of stress on health outcomes through mechanisms such as social comparisons (e.g., adopting group norms of

health behavior), social control (e.g., direct peer encouragement to engage in positive health behaviors), and directly utilizing or perceiving the availability of emotional and instrumental support from significant or similar others (Thoits, 2011). Generally speaking, social isolation has been linked to unhealthy responses to stress such as substance use, lower adherence to medical guidelines, and lower levels of exercise (Taylor, 2011). However, both the perception and actual utilization of social support have been shown to decrease engagement in risk-taking health behaviors, as well as increase participation in preventive health behaviors (Taylor, 2011).

The extant literature also provides evidence of social support buffering against the effect of discrimination on negative health outcomes (Pascoe & Richman, 2009; Ajrouch et al., 2010; Steers et al., 2019). Pascoe and Richman proposed that "seeking social support may buffer the effect of discrimination distress by enabling an individual to challenge the validity of discriminatory events and reduce negative feelings about the self, thereby reducing the chance that discriminatory experiences will exert an enduring impact on mental health outcomes" (2009, p. 533). In college populations, studies have generally found that perceived social support moderates the association between perceived stress and mental health outcomes (Wang et al., 2014). Furthermore, in college students experiencing discrimination, mentoring support, peer support, and general perceived social support have been found to moderate the effects of discrimination on health outcomes (Mayo & Le, 2021; Juang et al., 2016; Shi, 2021). However, some researchers have challenged the validity of the buffering effects model and the moderating role of social support in the context of discrimination research (Kondrat et al., 2018; Prelow et al., 2006). Research by Prelow and colleagues (2006) assessed three separate models (buffering, mobilization, and deterioration) considering the associations among perceived discrimination, social support, and psychological adjustment in college students. Their findings suggested that

social support did not mitigate discrimination's impact on psychological functioning, nor did social support networks mobilize to offer support. Instead, perceptions of social support decreased while symptoms of depression increased (Prelow et al., 2006).

Some of these conflicting results may be attributed to the shifting dynamics in social support during the transition to college. For instance, this might include varying degrees of success in establishing new social supports on-campus, changes in communication and relationships with friends from adolescence, and alterations in interactions with family/caregivers. Other explanations may lie in the way researchers measure and apply the complex construct of social support in discrimination research. For example, recent literature has worked to tease apart whether social support mediates or moderates the association between discrimination and health outcomes (Kondrat et al., 2018; Goreis et al., 2020), and if social support influences change based on social support type (e.g., appraisal, tangible/instrumental, belonging/emotional, self-esteem) (Ajrouch et al., 2010; Mossakowski & Zhang, 2014). These trends in the research have provided preliminary evidence suggesting that social support may function as a mediator between perceived discrimination and health outcomes (Kondrat et al., 2018; Goreis et al., 2020). Additionally, research into specific types of social support have shown that emotional support in particular influences health behaviors and mental health outcomes in individuals experiencing everyday discrimination. For example, a study found that Latino men who identified as gay reported lower levels of depression and participation in unprotected sex when they discussed discrimination with their social support networks (Yoshikawa et al., 2004).

While studies examining social support as a mediator between discrimination and health outcomes have yielded some positive results (Kondrat et al., 2018; Goreis et al., 2020), recent

literature has continued to reinforce social support as a moderating variable in this association (Steers et al., 2019). Due to these continued conflicting results, the current study examined social support as both a moderating and mediating variable. Based on previous research examining specific types of social support, the current study utilized a single measure of social support that incorporated instrumental, emotional, appraisal, and self-esteem support.

First-Generation College Students

The models discussed in the current study (see Figures 1 & 2) have provided a theoretical conceptualization for the mediating role of health behaviors and the moderating role of social support when examining the association between discrimination and mental health. The unique challenges faced by college students provide the impetus for the current study's focus on examining elements of these models in a sample of college students. However, an even more compelling case can be made for assessing the role of health behaviors and social support in these models among first-generation college students due to the additional adjustment and resource barriers they face compared to continuing-generation students.

As of the 2015-2016 academic year, it is estimated that 35% of college students are the first in their families to attend college, and 56% of college students may be the first in their families to earn a bachelor's degree (Postsecondary National Policy Institute, 2021; RTI International, 2019). Of these students, traditionally underrepresented minoritized racial and ethnic groups are more likely to be potential first-generation college students than White students (US Census Bureau, 2016). Attending college as a first-generation student presents its own set of unique obstacles. First-generation students often have less academic preparation, are less familiar with the academic environment, and are more likely to enroll part-time, which also makes them more likely to be ineligible for many resources designed to help with college adjustment

(Pascarella et al., 2004). First-generation college students are also more likely to report significantly lower social support and elevated symptoms of depression when compared to their continuing-generation counterparts (Jenkins et al., 2013). In essence, these factors operate in a compounding fashion to increase stress and decrease available coping resources.

When considered in the context of coping with discrimination on college campuses, first-generation students may be less supported and able to cope when compared with their continuing-generation peers. Although first-generation students may not necessarily report higher perceived discrimination than continuing-generation students, differences in perceived and actual support may have implications for how perceived discrimination impacts these two groups. To date, few studies have examined how social support affects the associations among perceived discrimination and mental health in both continuing-generation and first-generation students. Differences in social support among first-generation and continuing-generation students may help explain inconsistencies in the literature about the moderating role of social support in the college student population. Additionally, increased stress associated with attending college as a first-generation student may also impact engagement in risk-taking and preventive health behaviors. Given the potential differences in social support and health behaviors among first- and continuing-generation college students, the current study explored the proposed moderation and mediation models separately in both samples.

Current Study

As discussed, the associations among perceived discrimination, health, and social support are well-established in the literature. Published models examining pathways linking perceived discrimination to mental health outcomes often conceptualize health behaviors as a mediator and social support as a moderator (Pascoe & Richman, 2009). However, these pathways are not well-

studied or explained in college student populations and often focus heavily on experiences of racial and ethnic discrimination versus other types of discrimination. Given that college students face unique challenges with health behaviors and studies examining the buffering effects of social support among college students have yielded inconsistent findings (Prelow et al., 2006; Juang et al., 2016), it is necessary to determine whether these pathways exist among students experiencing multiple types of discrimination. For the purposes of this study, health behaviors were defined by the Health Behaviors Questionnaire (Vickers et al., 1990), which measures engagement in various preventive behaviors (e.g., wellness maintenance, accident control) and risk-taking behaviors (e.g., traffic-related, exposure to hazardous substances). This study extended the existing literature on perceived discrimination and mental health by directly examining the mediating and moderating pathways described above in a sample of undergraduate students experiencing several different types of everyday discrimination (e.g., gender, age, racial and ethnic, education and income-based, physical appearance). Specifically, this study had the following aims:

Aim 1

Examine health behaviors as a mediator in associations between perceived discrimination and mental health outcome variables (e.g., anxiety/depression, suicidality; see Figure 1). It was hypothesized that perceived discrimination would be directly associated with mental health outcomes. It was additionally predicted that health behaviors would have an indirect effect on the association between perceived discrimination and mental health outcomes, such that the direct association between discrimination and mental health outcomes would no longer exist when health behaviors were included in the model. In other words, it was predicted

that both risk-taking health behaviors and preventive health behaviors would independently mediate the association between perceived discrimination and mental health outcomes.

Figure 1

Health behaviors as a mediator in the association between perceived discrimination and mental health
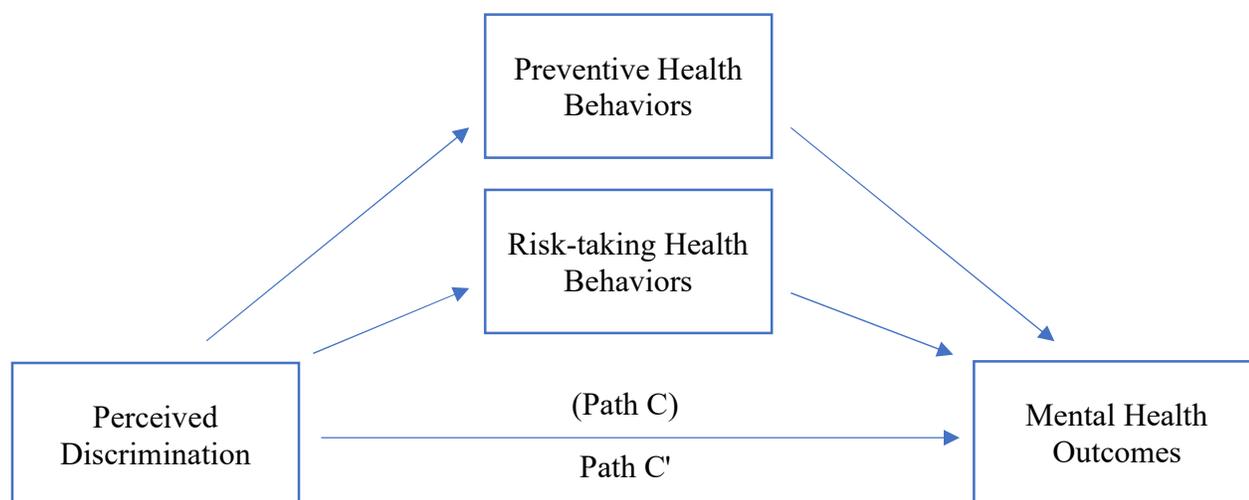
Aims 2A & B

Evaluate social support (a composite variable of emotional, instrumental, appraisal, and self-esteem) as both: A) a moderator and B) a mediator in the association between perceived discrimination and mental health outcomes (see Figure 2). Historical models suggest that social support moderates the association between perceived discrimination and mental health outcome variables (e.g., anxiety/depression, suicidality). In other words, when perceptions of social support are lower, the association between discrimination and mental health outcomes is more pronounced. However, more recent studies (Kondrat et al., 2018; Goreis et al., 2020) suggest that social support mediates the association between discrimination and mental health. Given the inconsistent evidence of social support as a moderator, the current study hypothesized that

perceived discrimination may act through changes in social support to impact mental health outcomes.

Figure 2

The role of social support in the association between perceived discrimination and mental health (i.e., anxiety/depression, suicidal behaviors)

4a. Social support as a moderator
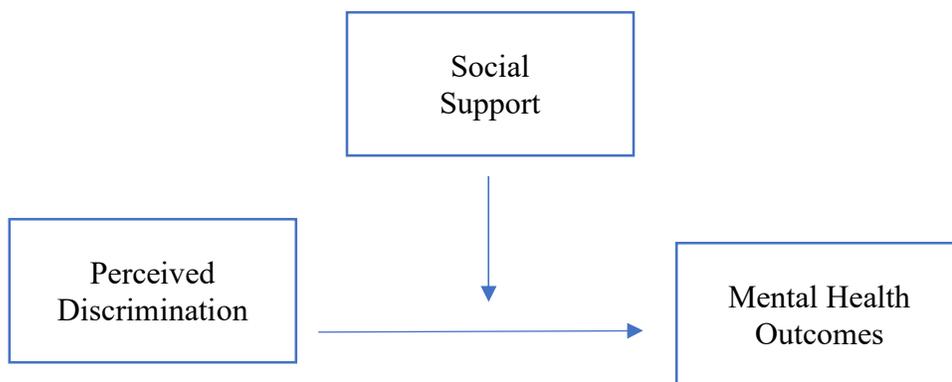
4b. Social support as a mediator
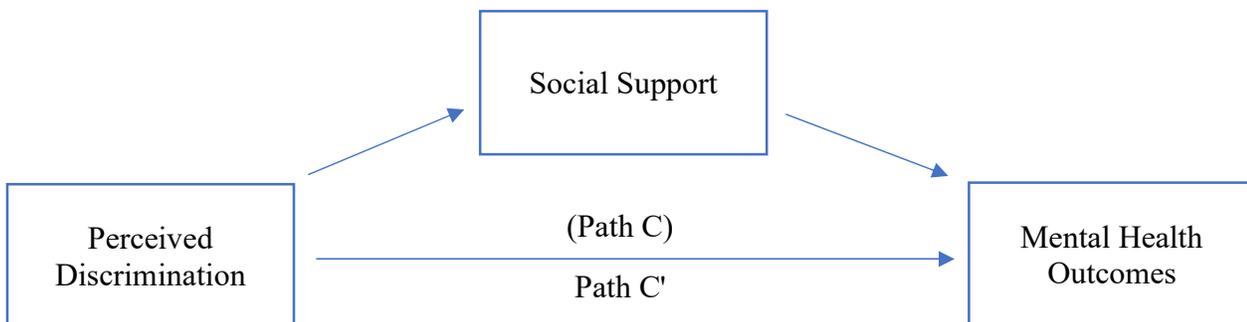
Aim 3

Describe differences in demographics (e.g., race and ethnicity, socioeconomic status [SES], gender), perceived social support, discrimination, health behaviors, and mental health

outcomes (e.g., anxiety/depression, suicidal behaviors) between first-generation and continuing-generation college students. In accordance with the literature and current Virginia Commonwealth University (VCU) student body statistics (Strategic Enrollment Management and Student Success [SEMSS], 2021), it was expected that the first-generation student sample would be comprised of a higher percentage of underrepresented racial and ethnic minority groups and lower socio-economic backgrounds relative to continuing-generation students. It was hypothesized that first-generation students would be more likely to report lower levels of perceived social support, higher levels of perceived discrimination, and worse mental health outcomes relative to continuing-generation students.

Aim 4

Examine the proposed mediation and moderation models (see Aims 1 & 2) in continuing-generation and first-generation college students separately. Although the literature suggests that first-generation college students may experience less social support and potentially more discrimination, often linked to risk-taking health behaviors, it was unclear whether these differences would significantly impact the proposed moderation and mediation models. As such, the examination of these models in both first- and continuing-generation students was exploratory.

Methods

Participants

Data for this study were obtained from a larger study conducted during the Fall 2017 academic semester that examined chronic illness, quality of life, and health behaviors in college students (A Study on College Health; Everhart, Miadich, PIs). The study was approved by VCU's Institutional Review Board (IRB). A total of 760 college students participated in the

study. Participants were recruited through the VCU SONA system, a database used to manage a research pool of primarily undergraduate students taking psychology courses. Potential participants reviewed a description of the study and, if interested, completed a pre-screener questionnaire to determine their eligibility. Eligibility for participation in the study included the following criteria: 18 years of age or older, current student at VCU, and the ability to read and understand English. Eligible participants completed the informed consent process electronically prior to beginning the questionnaire.

Of the 760 study participants, 30 did not complete questionnaires relevant to the current study and were excluded from analyses. Additionally, graduate students (n=4), multivariate outliers (n=5), and students who exceeded the young adult age range of 18 to 26 years (n=12) were also excluded from analyses. Thus, the current sample was comprised of the remaining 709 college students.

Design & Procedure

The current study was a cross-sectional design. Once eligibility was determined and consent obtained, participants followed a link in SONA to complete the questionnaires in Qualtrics and answered questions pertaining to their physical and mental health status, quality of life, engagement in health behaviors, and social support. Completion of the questionnaires took about 45 minutes. Given the nature of some of the mental health questions presented in the survey (i.e., a suicidal behavior measure), participants were provided with a list of behavioral health resources available on-campus for VCU students both in the informed consent document and immediately following the administration of the Suicidal Behaviors Questionnaire (SBQ-14). Since the questionnaire was administered through SONA, no identifying information was collected and data from participants were automatically stored using a unique identifier. Upon

completion of the survey, students were given 1 SONA course credit which they could choose to apply to a participating psychology course. Participants could also choose to complete the study and receive no SONA course credit.

Measures

Demographics

Participants reported on demographic variables such as their age, gender, race/ethnicity, sexual orientation, relationship status, family income, family financial support, first-generation student status, and academic class.

Interpersonal Support Evaluation List (ISEL) – College Version

The Interpersonal Support Evaluation List (ISEL) – College Version (Cohen et al., 1985) is a 48-item validated measure assessing perceived social support among college students. It is comprised of four subscales measuring different types of perceived support: appraisal (provision of information/feedback), tangible (supplying materials or services), belonging (social companionship), and self-esteem (communication serving to enhance one's sense of value). Each subscale presents a series of 12 statements (e.g., tangible - "I know someone who would loan $50 so I could go away for the weekend;" belonging - "I belong to a group at school or in town that meets regularly or does things together regularly;" appraisal - "Lately, when I've been in troubled, I keep things to myself;" self-esteem - "Most people who know me well think highly of me") and asks respondents to rate how much the statement applies to them on a four-point Likert scale. Response options are: "Definitely false," "Probably false," "Probably true," "Definitely true." Items 1-6 on each subscale are scored by assigning 1 point for each probably or definitely true responses and 0 points for each probably or definitely false responses. Items 7-12 on each subscale are reverse coded (i.e., 0 for true responses and 1 for false responses). Scores yield

subscale scores (ranging from 0-12) which are then totaled to calculate the ISEL score (ranging from 0-48). Higher scores reflect higher levels of perceived social support.

The ISEL has demonstrated a high internal consistency for the total scale scores, positive correlation with other social support measures, and adequate test-retest reliability across different cultures, contexts, and languages; however, variable internal consistency of the four subscale scores has been noted in some samples (Delistamati et al., 2006; Cohen et al. 1985; Zarzycka et al., 2017). Given the variability in internal consistency of the subscale scores, the current study utilized the total ISEL score in all analyses. Cronbach's alpha reliability coefficient for the total scale in this sample was α=.88. Internal consistency for the individual subscales in this sample were as follows: tangible α=.73, belonging α=.73, appraisal α=.85, self-esteem α=.69.

Health Behaviors Checklist (HBCL)

Participants completed the Health Behaviors Checklist (HBCL) (Vickers et al., 1990), a 40-item questionnaire measuring engagement in various preventive health behaviors and risk-taking health behaviors. The preventive health behaviors dimension is comprised of two subscales: wellness maintenance and enhancement (10 items) ("I see a doctor for regular checkups") and accident control (6 items) ("I destroy old or unused medicines"). Similarly, the risk-taking health behaviors dimension is also made up of two subscales: traffic risk (7 items) ("I speed while driving") and substance use risk (3 items) ("I do not drink alcohol"). Respondents are asked to read a series of statements about health behaviors and rate how much each statement applies to them on a scale of 1 to 5. Response options are scored as follows: 1 - Strongly Disagree, 2 – Disagree, 3 – Neither Agree nor Disagree, 4 – Agree, and 5 – Strongly Agree. Items 12, 17, 18, 26, and 29 are reverse coded. Items are summed to provide total scores for the preventive health behavior and risk-taking behaviors dimensions with higher scores indicating

higher engagement in preventive or risk-taking behavior. Validation studies have yielded the following Cronbach's α ranges across each scale dimension: 0.74 – 0.82 for wellness maintenance and enhancement, 0.57 – 0.73 for accident control, 0.43 – 0.61 for substance risks, and 0.64 – 0.75 for traffic risks. Inter-scale correlations across four samples ranged from 0.05 – 0.58 (absolute) (Vickers et al., 1990). In the current sample, Cronbach's alpha reliability coefficient was determined to be α=.73 for wellness maintenance and enhancement, α=.62 for accident control, α=.67 for substance risk, and α=.67 for traffic risk subscales. Internal consistency scores for the two broader dimensions in the current study were: α=.78 for preventive behaviors and α=.69 for risk-taking. It is noted that the alpha level for the risk-taking behaviors domain fell just outside the .70 cut-off for the acceptable range (Cortina, 1993).

Everyday Discrimination Scale (EDS)

The Everyday Discrimination Scale (EDS) (Williams et al., 1997) is a 9-item measure designed to assess the frequency of everyday experiences of discrimination. Respondents are provided a list of discrimination events and asked to assess how frequently they have experienced these types of discrimination. Examples of items include: "You are treated with less respect than other people are" and "You are called names or insulted." Responses are captured using a 6-point Likert scale: 6 – "Almost everyday," 5 – "At least once a week," 4 – "A few times a month," 3 – "A few times a year," 2 – "Less than once a year," and 1 – "Never." If a respondent answers "A few times a year" or more, this follow-up question is asked "What do you think is the main reason for these experiences?" A list of 12 response options (e.g., gender, race, ancestry/national origin, age, religion) is provided as well as a free response option to capture additional reasons.

Michaels and colleagues (2019) identified two established methods for coding the EDS: situation-based (total number of situations experienced) and frequency (sum of Likert scale scores). They also developed a newer method of coding, chronicity, in which scores associated with response options are weighted to reflect differences in time/frequency. Given that mental health outcomes are consistently associated with the EDS regardless of coding method (Michaels et al., 2019) and in order to maximize the continuous nature of the data, the current study utilized frequency coding which has a possible range of 9 – 54. Higher scores indicate greater frequency of everyday discrimination events. Thus, we focused on the overall, cumulative experience of discrimination, and not a specific type of discrimination. Validation studies using the EDS have reported high internal consistency, with Cronbach's α ranges from 0.80 - 0.88, and demonstrated higher reliability on this measure when compared to similar single-item questionnaires (Taylor et al., 2004; Krieger et al., 2005). Cronbach's alpha reliability coefficient for the total scale in this sample was α=.91.

Hopkins Symptom Checklist (HSCL-25)

The Hopkins Symptom Checklist (HSCL-25) is a 25-item symptom inventory designed to measure symptoms of psychological distress (Parloff et al., 1954). It consists of two subscales assessing symptoms of anxiety and depression. Examples of anxiety items include: "suddenly scared for no reason," "nervousness or shakiness inside," and "heart pounding or racing." The depression subscale includes items such as: "crying easily," "feeling no interest in things," and "feeling everything is an effort." Items are assessed using a 4-point Likert scale, ranging from 1 ("Not at all") to 4 ("Extremely"). Three scores are calculated: the average of 10 anxiety items comprises the anxiety subdomain score, the average of 15 depression items comprises the depression subdomain score, and a total score is calculated using the average of all 25 responses.

For the purposes of this study, a composite of depression/anxiety was used and the average score of all items was calculated. Total scores range from 0-4, with higher scores representing higher average number of symptoms. A cut-off score of 1.75 is used to indicate that an individual may meet criteria for a psychiatric diagnosis, with a high level of specificity and sensitivity (Veijola et al., 2003). The HSCL-25 has demonstrated a consistently high internal validity, criterion validity, and reliability across cultures, languages, and contexts (Rodríguez-Barragán et al., 2021; Glaesmer, et al., 2014). Cronbach's alpha reliability coefficient for the total scale in this sample was α=.96.

Suicidal Behaviors Questionnaire - 14 (SBQ-14)

The Suicidal Behaviors Questionnaire - 14 (SBQ-14) is a 34-item measure assessing suicidal ideation and behaviors (Linehan, 1996). Specifically, it is designed to assess for the potential of suicidal behavior, contemplation of suicide, suicide attempts, and risk for completion of suicide. In consultation with the IRB, the SBQ-14 questionnaire was adapted for the current study due to ethical concerns regarding questions about suicide attempts and future suicide risk. Specifically, the current study only included the first 11-items of the SBQ-14. The first item on the questionnaire asks, "Have you thought about or attempted to kill yourself in your lifetime?" Response options for this item are: 0 -"No," 1 - "It was just a passing thought," 2 - "I briefly considered it, but not seriously," 3 - "I thought about it and was somewhat serious," 4 - "I had a plan for killing myself which I thought would work and seriously considered it," 5 - "I attempted to kill myself, but I do not think I really meant to die," and 6 - "I attempted to kill myself, and I think I really hoped to die." Items 2-6 inquire about the frequency of suicidal ideation within the respondent's lifetime, last year, last 4 months, last month, and last several days. Responses are scored using a 5-point Likert scale (0 - "Not at all," 1 - "Rarely," 2 - "Sometimes," 3 – "Often,"

4 - "Very often"). Items 7-11 ask about communication of suicidal intent during the respondent's lifetime, last year, last 4 months, last month, and last several days. Responses are scored using a 3-point Likert scale (0 - "No," 1 - "Yes, during one short period of time," and 2 - "Yes, more than on period of time"). Total scores are calculated (range 0-36), with higher scores indicating higher levels of suicidality.

Different versions of the SBQ have been utilized across a wide variety of both clinical and non-clinical samples and have shown high test-retest reliability, as well as strong concurrent validity (Brown, 2002). One validation study conducted by Osman and colleagues (2001), demonstrated high internal consistency of the measure across four samples (Cronbach α ranged from 0.76 – 0.88). Although the current study did not utilize all items on the SBQ-14 measure, past psychometric analysis has yielded strong sensitivity, specificity, and predictive value of the first item alone (Winters et al., 2002). Cronbach's alpha reliability coefficient for the total scale in this sample was α=.90.

Analysis Plan

Before hypothesis testing, data were checked for missing data, univariate and multivariate normality, residual normality, linearity, homoscedasticity, and multicollinearity. Raw data were stored and analyzed using IBM SPSS statistics v.28.0 software. Prior to analyses, raw data from individual measures were summed to derive calculated measure totals and subscale totals. Cronbach's alpha was calculated for each measure. Descriptive statistics were run to describe the sample and a series of one-way ANOVAs were conducted as needed to determine covariates. Post hoc analyses using Tukey's HSD were conducted to further describe significant mean differences between groups.

Power

Using empirical power simulation models for mediation analyses (Fritz & MacKinnon, 2007), the minimum required sample size for a full mediation model using percentile-bootstrapping was determined to be 558 participants. This was the minimum sample size required to detect small effects (0.14) in both the a (independent variable to mediator) and b (mediator to dependent variable) pathways with a statistical power of 0.80 and an α error probability of .05. This, coupled with the utilization of percentile bootstrapping methods, ensured sufficient power with the current sample of 709 participants for all analyses. In our sample of 709 participants, 30.2% identified as first-generation college students. With 214 first-generation and 495 continuing-generation students, our study was sufficiently powered at .80 for moderation analyses. Mediation analyses run in first- and continuing-generation samples were sufficiently powered at .80 to detect medium effects.

Analyses for Aim 1

In order to test the mediational hypotheses, mediation analyses (see Figure 1) were run using model number 4 (parallel mediation) in PROCESS SPSS macro version 4.0 (Hayes, 2013). The first model featured risk-taking and preventive health behaviors as the mediators and anxiety/depression as the outcome variable. The second model included the same predictor and mediator variables, but the outcome variable was suicidal behavior. In both models, covariates were entered simultaneously with the IV and DV. Percentile bootstrapping analyses were used to assess the indirect effect of perceived discrimination on mental health outcomes via health behaviors.

Analyses for Aims 2A & B

In order to test our hypotheses regarding the buffering effects of social support on risks associated with perceived discrimination (see Figure 2), analyses were run using model number 1

(moderation) in PROCESS SPSS macro version 4.0 (Hayes, 2013). To test the hypothesis that social support moderated the association between perceived discrimination and mental health outcomes, two moderation analyses were conducted. In both moderation analyses, the independent variable (IV) was perceived discrimination (EDS) and social support (ISEL) was the moderator. Both the IV and moderator were entered as continuous variables and centered using PROCESS macro. The first moderation model used suicidal behavior (SBQ-R) as a continuous outcome variable and the second model included symptoms of anxiety/depression (HSCL-25) as a continuous outcome variable. Covariates, predictors, and the moderator were entered into the model simultaneously.

To assess the potential role of social support as a mediator in the association between discrimination and mental health, analyses were run using model number 4 (mediation) in PROCESS SPSS. Two models were run. In the both models, the IV was perceived discrimination and social support was the mediator. Covariates were entered simultaneously into the models with the IV and mediator. In the first model, the outcome variable was anxiety/depression and in the second model it was suicidal behavior.

Analyses for Aims 3 & 4

Descriptive analyses (e.g., race/ethnicity, SES, gender) were run for both first-generation and continuing-generation college student participants. Differences in demographics between these two groups were generated using percentiles and frequencies. A series of chi-squared tests were run to further specify significant demographic differences between first- and not-first-generation student samples. A series of independent sample t-tests were used to describe mean differences across first-generation and continuing-generation students on measures of perceived social support (ISEL), discrimination (EDS), health behaviors (HBCL), and mental health

outcomes (SQB-R & HSCL-25). To test our exploratory hypothesis regarding the mediating role of health behaviors in the association between perceived discrimination and mental health outcomes, analyses discussed in Aim 1 were replicated in first-generation college students and then repeated for continuing-generation college students. Additionally, our hypothesis regarding the buffering effects of social support on risks associated with perceived discrimination was assessed in each group using the moderation analysis procedures described in Aim 2.

Results

Preliminary Analyses

Prior to analyses, data were checked for univariate and multivariate normality, residual normality, linearity, and homoscedasticity, and multicollinearity. No out-of-range values were detected for any variables. Given the large sample size of the current study, normality was assessed using skewness and kurtosis in conjunction with visual examination. For a sample size that exceeded 300 participants, cutoffs for skewness and kurtosis were determined to be 2 and 7 respectively (Kim, 2013). Univariate outliers (absolute standardized scores greater than 3.29, $p <$ .001) were detected in measures of anxiety/depression (n = 3), social support (n = 1), preventive health behaviors (n = 5), risk taking health behaviors (n = 1), discrimination (n = 4), and suicidal behavior (n = 11). All univariate outliers were winsorized following standard procedures (Tabachnick & Fidell, 2007). Following the analysis of Mahalanobis statistics, 5 multivariate outliers were detected and the cases removed. Visual inspection of residual plots suggested that normality assumptions were met for all variables except the SBQ scale. Log transformation of the SBQ scale was conducted to reduce issues of non-normality. Following all winsorizing, deletions, and transformations, skewness and kurtosis were within cutoff ranges for all variables (see Table 1).

Additionally, data were checked for missing values. It was determined that less than 1% of all data were missing. Missing variable scores resulted in a range of 2.3 – 14.0% of missing total scale scores for all measures included in analyses. Given the relatively small number of missing data, pairwise deletion was used in analyses to avoid the potential bias associated with mean imputation. Little's Missing Completely at Random (MCAR; Little 1988) test was conducted and yielded a non-significant p-value (p = .218), which suggests a non-biased, random influence of missing data on the current analyses.

Table 1

Skewness & kurtosis after transformations, winsorizing, and deletions

	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Everyday Discrimination (EDS)	.470	.093	-.238	.186
Social Support (ISEL)	-.664	.098	.084	.195
Suicidal Behavior (SBQ)	.487	.094	-1.134	.187
Anxiety/Depression (HSCL)	.833	.095	.095	.114
Risk-Taking Health Behavior	-.083	.095	.341	.189
Preventive Health Behavior	-.166	.094	.247	.188

Demographics & Descriptives

Participants' (n = 709) ages ranged from 17-26 years old (M = 19.38, SD = 1.69). Respondents identified as 72.2% female, 42.8% White, 88.5% heterosexual, and 30.2% first-generation students. A complete breakdown of participant demographics is provided in Table 2. Descriptive statistics for all predictor and outcome variables are presented in Tables 3 and 4.

Table 2

Sample Demographics

Variable	n (%)
Gender Identity	
Female	509 (72.2%)
Male	189 (26.8%)
Transgender	4 (0.6%)
Other	3 (0.4%)
Race/Ethnicity	
Black/African American	138 (19.5%)
White/Anglo American	303 (42.8%)
Latinx	57 (8.1%)
Asian	128 (18.1%)
American Indian/Alaskan Native	1 (0.1%)
Native Hawaiian or Other Pacific Islander	3 (0.4%)
Mixed or Multi-racial	61 (8.6%)
Other	17 (2.4%)
Sexual Orientation	
Heterosexual	624 (88.5%)
Bisexual	48 (6.8%)
Gay/Lesbian	16 (2.3%)
Queer	7 (1.0%)
Other	10 (1.4%)
Relationship Status	
Single/Never Married	448 (63.2%)
In a Relationship/Never Married	253 (35.7%)
Married	6 (0.8%)
Separated	2 (0.3%)
Family Income	
$200,000 and up	87 (12.5%)
$100,000 - $199,999	199 (28.6%)
$60,000 - $99,999	177 (25.4%)
$30,000 - $59,999	131 (18.8%)
$15,000 - $29,999	75 (10.8%)
Less than $14,999 per year	27 (3.9%)
First Generation Student	
Yes	214 (30.2%)
No	495 (69.8%)
Academic Class	
Freshman	363 (51.3%)
Sophomore	159 (22.5%)
Junior	129 (18.2%)
Senior	56 (7.9%)

Table 3

Descriptive Statistics

	M	*SD*	Range
Everyday Discrimination (EDS)	22.48	9.20	9-53
Social Support (ISEL)	33.95	8.12	7-48
Suicidal Behavior (SBQ)[a]	3.48	4.89	0-20
Anxiety/Depression (HSCL)	1.76	0.63	1-3.84
Risk-Taking Health Behavior	32.03	6.54	11-53
Preventive Health Behavior	51.32	9.41	21-80

[a] Represents raw mean, SDs, and ranges

Table 4

Descriptive Statistics: Type of Discrimination Reported

Type of Discrimination	n (%)
Ancestry/National Origin	93 (13.1%)
Gender	293 (41.3%)
Race	256 (36.1%)
Age	289 (40.8%)
Religion	68 (9.6%)
Height	102 (14.4%)
Weight	124 (17.5%)
Other physical trait	224 (31.6%)
Sexual Orientation	45 (6.3%)
Education or Income	111 (15.7%)
Physical Disability	16 (2.3%)
Chronic Illness	13 (1.8%)

Note. Participants had the ability to select multiple responses

Covariate Testing

In order to identify potential demographic covariates, a series of one-way ANOVAs were run to examine differences in anxiety/depression (HSCL) and suicidal behavior (SBQ) across demographics variables (see Table 5). Results indicated that there was a significant difference in reported suicidal behavior based on race/ethnicity ($F(5,673) = 3.60$, $p = .003$). Although not ideal, we collapsed American Indian/Alaskan Native (n = 1) and Native Hawaiian/Other Pacific Islander (n = 3) into the "other" category due to small response size. Post-hoc analyses using Tukey's HSD tests revealed that the mean difference in SBQ scores for African American ($M = 2.52$, $SD = 4.24$) and White participants ($M = 3.95$, $SD = 5.16$; $p = .020$), such that White participants reported more suicidal behavior as compared to African American participants. SBQ scores between Latinx ($M = 2.01$, $SD = 3.42$) and White participants were statistically different ($M = 3.95$, $SD = 5.16$; p=.041), such that White students endorsed greater suicidal behavior than Latinx students. Reported suicidal behavior also varied significantly based on sexual orientation ($F(4, 671) = 7.64$, $p < .001$). Post hoc comparisons suggested that individuals identifying as bisexual ($M = 6.44$, $SD = 3.28$) scored significantly higher on a measure of suicidality than heterosexual individuals ($M = 3.14$, $SD = 4.59$); $p < .001$. Scores on measures of anxiety/depression also varied significantly by sexual orientation ($F(4, 647) = 5.22$, $p < .001$). Post hoc results indicated that individuals identifying as heterosexual ($M = 1.72$, $SD = 0.61$) endorsed fewer anxiety/depression symptoms than those identifying as bisexual ($M = 2.08$, $SD = 0.62$), $p = .002$

Outcomes for anxiety/depression symptoms varied significantly by gender ($F(3,649) = 10.43$, $p < .001$). Post hoc comparisons using Tukey's HSD tests indicated that women ($M = 1.81$, $SD = 0.63$) endorsed significantly more symptoms of anxiety/depression than men ($M = 1.59$, $SD = 0.56$) ($p < .001$). Both anxiety/depression symptoms ($F(3,650) = 3.44$, $p = .017$) and

suicidal behavior ($F(3,674) = 2.76$, $p = .042$) differed significantly based on academic class. Using Tukey's HSD tests, post hoc analyses revealed that freshman ($M = 1.70$, $SD = 0.59$) endorsed fewer symptoms of anxiety/depression than sophomores ($M = 1.88$, $SD = 0.71$), $p = .015$.

No significant differences in mental health outcome variables were detected based on relationship status, family financial contribution, first-generation student status, employment status, or caregiver status. Although no significant differences were detected in anxiety/depression ($F(5,639) = 1.74$, $p = .124$) or suicidal behavior ($F(5,662) = 0.37$, $p = .870$) based on income in this sample, it was still included as a covariate in all analyses based on previous literature. All other identified covariates were controlled for across all analyses.

Hypotheses Testing

Aim 1

We used Hayes' (2013) PROCESS macro with 5,000 bootstrapped samples to investigate the hypothesis that risk-taking and preventive health behaviors mediated the association between perceived discrimination and anxiety/depression. Results indicated that perceived discrimination was associated with significantly lower engagement in preventive health behaviors ($b = -.105$, 95% CI = [-.186, -.023], $p = .012$) and greater participation in risk-taking health behaviors ($b = .074$, 95% CI = [.018, .131], p = .010). A 95% confidence interval indicated that the indirect effect through preventive health behaviors, when controlling for risk-taking and identified covariates (e.g., race/ethnicity, academic class, gender, sexual orientation, and family income) was significant, $b = .0009$, 95% CI = [.0001, .0020]. However, the indirect effect through risk-taking behaviors, when controlling for the other mediator and covariates, was not significant, $b = .0005$, 95% CI = [-.0001, .0013].

Perceived discrimination was still significantly associated with anxiety/depression even after taking into account the indirect effect through both mediators ($b = .0192$, 95% CI = [.0140, .0245], $p < .001$). Approximately 14% of the variance in anxiety/depression was accounted for by perceived discrimination, risk-taking, and preventive health behaviors after controlling for covariates ($R^2 = .14$). Taken together, these results suggest that preventive health behaviors partially mediated the association between perceived discrimination and anxiety/depression (see Figure 3 below).

Figure 3

Risk-taking and preventive health behaviors as mediators in the association between perceived discrimination and anxiety/depression
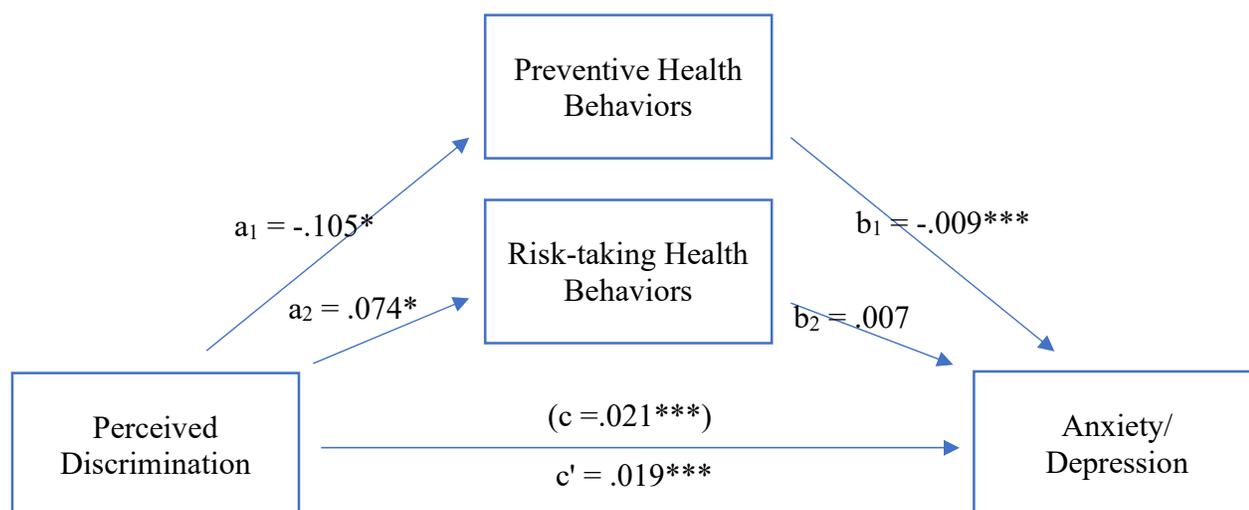
* $p < .05$, ** $p < .01$, *** $p < .001$

We conducted bootstrapping analysis to test the hypothesis that risk-taking and preventive health behaviors mediated the association between perceived discrimination and suicidal behavior. As can be seen in Figure 4, perceived discrimination was associated with significantly lower engagement in preventive health behaviors ($b = -.095$, 95% CI = [-.176, -

.014], $p = .021$) and greater participation in risk-taking health behaviors ($b = .085$, 95% CI = [.029, .141], p = .003). The pathways through preventive health behaviors yielded a mean bootstrap estimate of the indirect effect of .0007 (95% CI = [.0001, .0015]) after controlling for risk-taking behavior and covariates. Because the 95% confidence interval for the indirect effect did not include 0, it was concluded that a significant mediation effect occurred. The indirect effect through risk-taking behaviors was not significant, $b = .0003$, 95% CI = [-.0001, .0009].

When considering the overall model, we found that approximately 10% of the variance in suicidality was accounted for by the predictors after controlling for covariates ($R^2 = .10$). However, perceived discrimination was still a significant predictor after accounting for the indirect effects of both mediators ($b = .011$, 95% CI = [.008, .015], $p < .001$). This suggests that preventive health behaviors only partially mediated the effect of perceived discrimination on suicidal behaviors.

Figure 4

Risk-taking and preventive health behaviors as mediators in the association between perceived discrimination and suicidal behavior
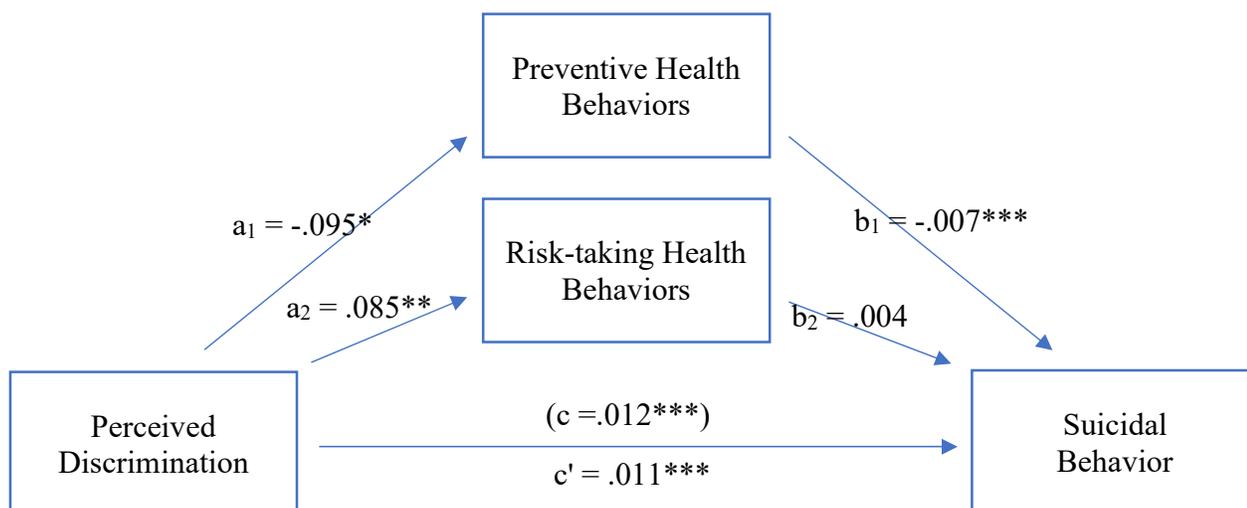

$* p < .05, ** p < .01, *** p < .001$

Aim 2A

We evaluated the hypothesized moderating influence of social support on the association between perceived discrimination and anxiety/depression using PROCESS macro (Hayes, 2013). The overall model was significant, $F(8, 554) = 21.02$, $p < .001$, $R^2 = .23$. Both perceived discrimination ($b = .02$, $t(554) = 6.46$, $p < .001$) and social support ($b = -.02$, $t(554) = -8.16$, $p < .001$) were significant predictors of anxiety/depression. However, results indicated that the interaction between perceived discrimination and social support was not statistically significant ($b = -.0001$, $t(548) = -0.35$, $p = .729$). These results suggest that social support did not moderate the association between discrimination and anxiety/depression. A visual representation of the interaction effect is presented in Figure 5 below.

Figure 5

Social support as a moderator in the association between perceived discrimination and anxiety/depression
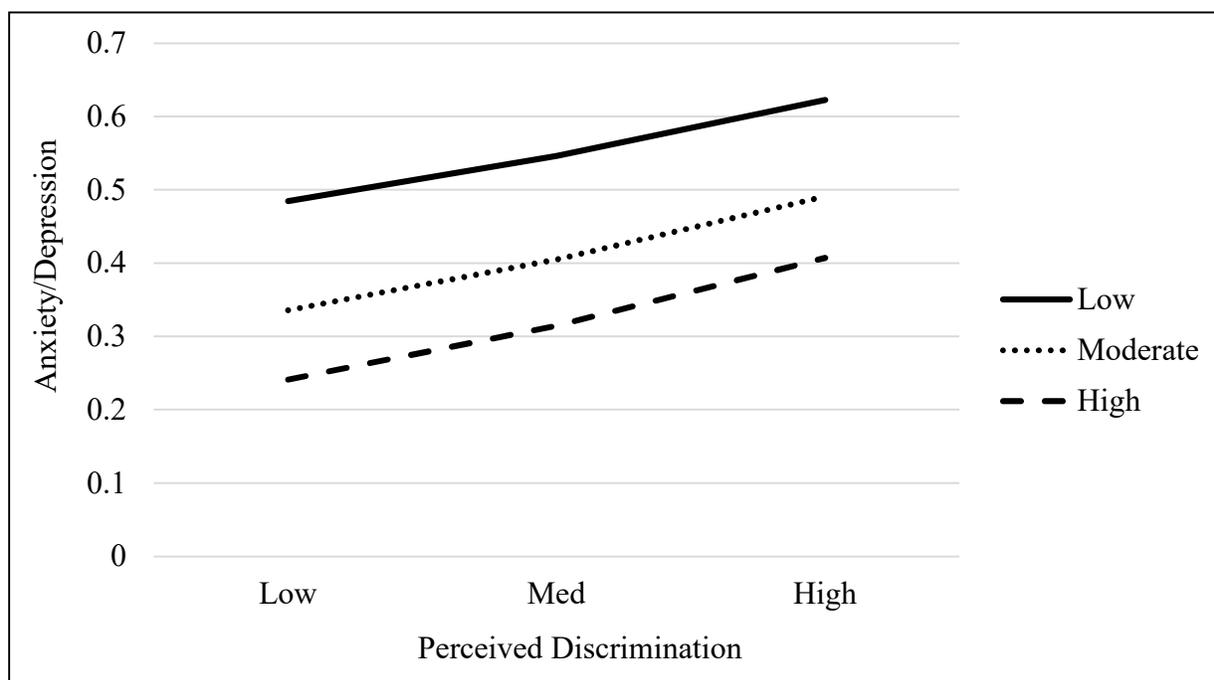
We additionally examined social support as a moderator in the association between perceived discrimination and suicidal behavior. The overall model was significant, $F(8, 568) = 12.69$, $p < .001$, $R^2 = .15$. Perceived discrimination ($b = .009$, $t(568) = 4.47$, $p < .001$) and social support ($b = -.01$, $t(568) = -6.07$, $p < .001$) were both significant predictors of suicidal behavior. However, results indicated that the interaction effect was not statistically significant ($b = .0001$, $t(568) = 0.38$, $p = .706$), suggesting that social support did not moderate the association between discrimination and suicidal behavior. See Figure 6 for a graph of the interaction effect.

Figure 6

Social support as a moderator in the association between perceived discrimination and suicidal behaviors
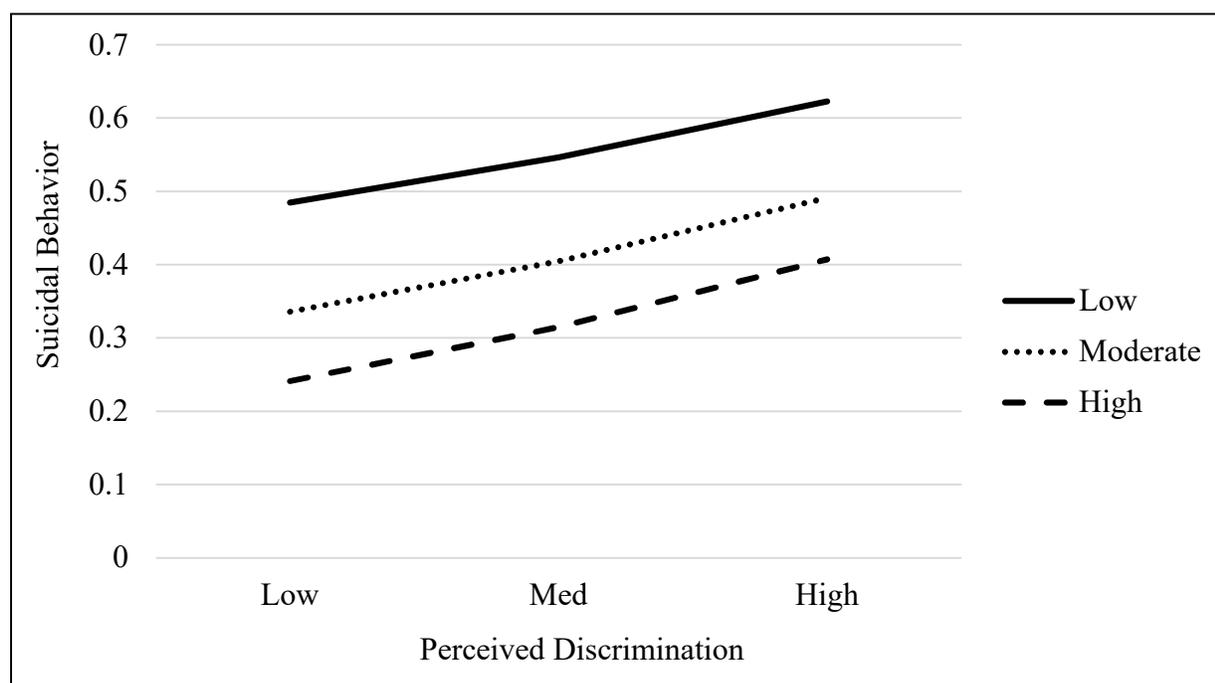
Aim 2B

We used Hayes' (2013) PROCESS macro with 5,000 bootstrapped samples to explore social support as a mediator of the association between perceived discrimination and anxiety/depression. Results indicated that perceived discrimination was a significant predictor of social support (b = -.147, 95% CI = [-.221, -.072], p < .001), and social support was a significant predictor of anxiety/depression (b = -.024, 95% CI = [-.030, -.018], p < .001) (see Figure 7). However, perceived discrimination remained a significant predictor of anxiety/depression after accounting for the indirect effect of the mediator and controlling for covariates (e.g., race/ethnicity, academic class, gender, sexual orientation, and family income) (b = -.017, 95% CI = [.012, .023], p < .001). Approximately 14% of the variance in anxiety/depression was accounted for by the predictors (R^2 = .14). The range of estimated values for the indirect effect of perceived discrimination on anxiety/depression did not include 0, indicating a significant mediation effect (b = .004, 95% CI = [.002, .006]). Ultimately, these results suggest that social support partially mediated the association between perceived discrimination and anxiety/depression.

Figure 7

Social support as a mediator in the association between perceived discrimination and anxiety/depression
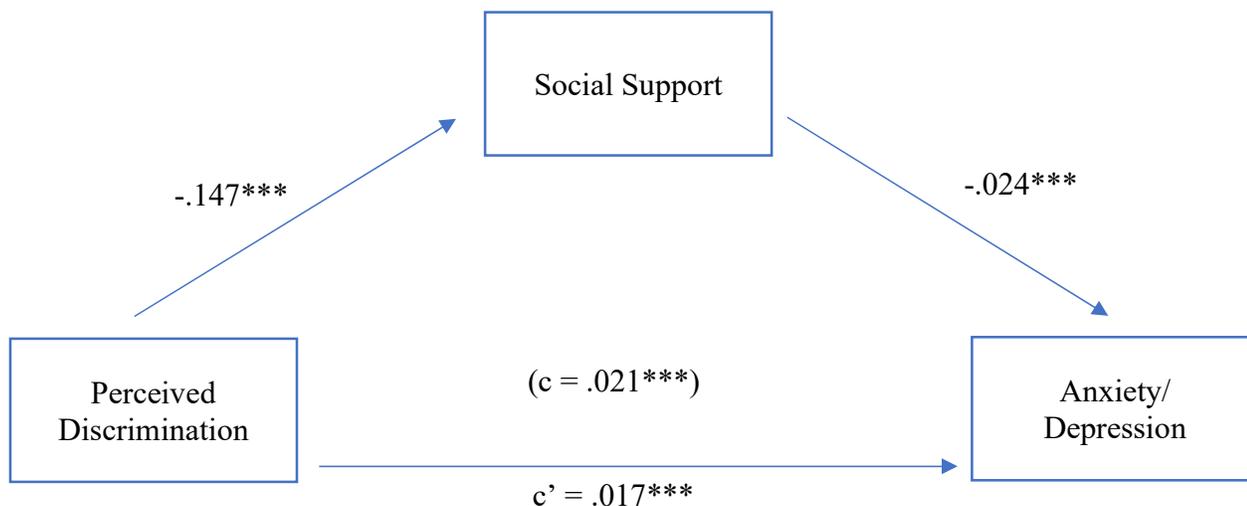
* *p* < .05, ** *p* < .01, *** *p* < .001

Bootstrapping analysis was conducted to test the hypothesis that social support mediated the association between perceived discrimination and suicidal behavior. This model, conducted with 5,000 bootstraps, yielded a mean bootstrap estimate of the indirect effect of .002 (95% CI = [.001, .003]) after controlling for covariates. Approximately 10% of the variance in suicidality was accounted for by the predictors ($R^2 = .10$). Because the 95% confidence interval for the indirect effect did not include 0, it was concluded that a significant mediation effect occurred. However, perceived discrimination was still a significant predictor after accounting for the mediator and controlling for covariates ($b = .009$, 95% CI = [.005, .012], $p < .001$) suggesting that social support partially mediated the effect of perceived discrimination on suicidal behavior (see Figure 8).

Figure 8

Social support as a mediator in the association between perceived discrimination and suicidal behaviors

	Social Support	
-.153***		-.013***

| Perceived Discrimination | (c = .010***) | Suicidal Behaviors |

c' = .009***
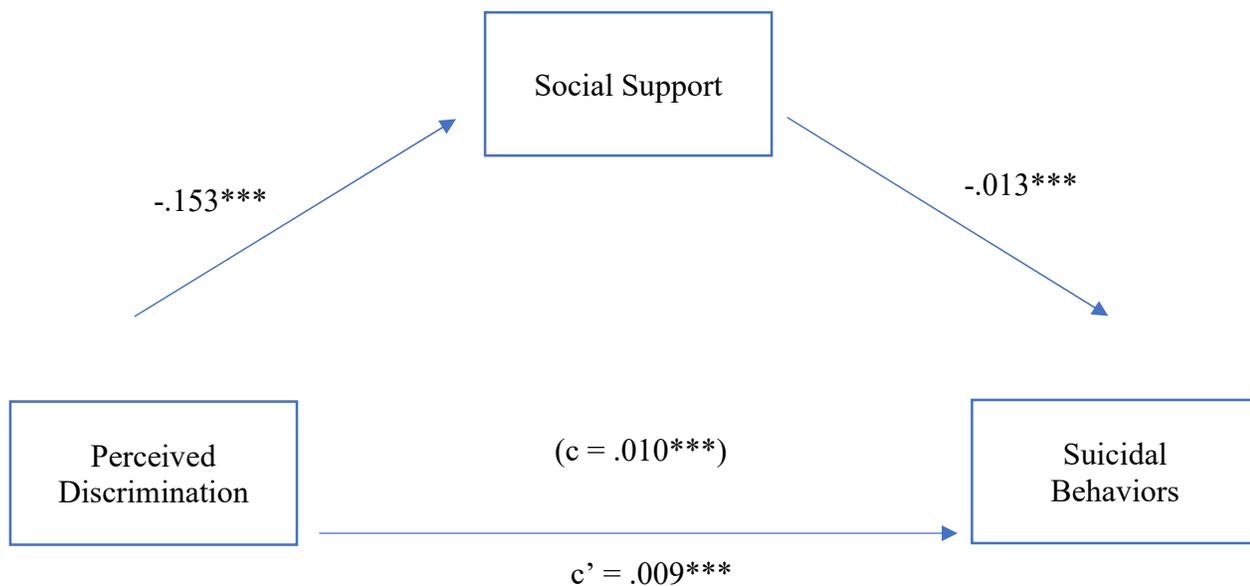
* $p < .05$, ** $p < .01$, *** $p < .001$

Aim 3

     In the first-generation student sample (n = 214), ages ranged from 17-26 years old ($M =$ 19.49, $SD = 1.90$). Respondents identified as 72.3% female, 29.4% White, and 92.5% heterosexual. In the continuing-generation student sample (n = 495), ages ranged from 18-26 years old ($M = 19.34$, $SD = 1.58$). Students in the continuing-generation student sample identified as 72.2% female, 48.6% White, and 86.8% heterosexual. A complete breakdown of first-generation and continuing-generation student demographics are provided in Table 5.

Table 5

First-Generation & Continuing-Generation Student Demographics

Variable	FGS n (%)	CGS n (%)	Chi-square
Gender Identity			X^2 (3, N = 705) = 3.12
Female	154 (72.3%)	355 (72.2%)	
Male	59 (27.7%)	130 (26.4%)	
Transgender	0	4 (0.8%)	
Other	0	3 (0.6%)	
Race/Ethnicity			X^2 (7, N = 708) = 44.35***
Black/African American	45 (21.0%)	93 (18.8%)	
White/Anglo American	63 (29.4%)	240 (48.6%)	
Latinx	35 (16.4%)	22 (4.5%)	
Asian	45 (21.0%)	83 (16.8%)	
American Indian/Alaskan Native	1 (0.5%)	0	
Native Hawaiian or Other Pacific Islander	1 (0.5%)	2 (0.4%)	
Mixed or Multi-racial	17 (7.9%)	44 (8.9%)	
Other	7 (3.3%)	10 (2.0%)	
Sexual Orientation			X^2 (1, N = 705) = 4.63*
Heterosexual	196 (92.5%)	428 (86.8%)	
Bisexual	12 (5.7%)	36 (7.3%)	
Gay/Lesbian	3 (1.4%)	13 (2.6%)	
Queer	0	7 (1.4%)	
Other	1 (0.5%)	9 (1.8%)	
Relationship Status			X^2 (3, N = 709) = 1.77
Single/Never Married	130 (60.7%)	318 (64.2%)	
In a Relationship/Never Married	82 (38.3%)	171 (34.5%)	
Married	1 (0.5%)	5 (1.0%)	
Separated	1 (0.5%)	1 (0.2%)	
Family Income			X^2 (5, N = 696) = 65.47***
$200,000 and up	14 (6.6%)	73 (15.1%)	
$100,000 - $199,999	36 (17.1%)	163 (33.6%)	
$60,000 - $99,999	46 (21.8%)	131 (27.0%)	
$30,000 - $59,999	61 (28.9%)	70 (14.4%)	
$15,000 - $29,999	41 (19.4%)	34 (7.0%)	

Less than $14,999 per year	13 (6.2%)	14 (2.9%)
Family Financial Support		X^2 (1, $N = 708$) = 21.94***
Support	165 (77.1%)	446 (90.3%)
No Support	49 (22.9%)	48 (9.7%)
Academic Class		X^2 (3, $N = 707$) = 8.15*
Freshman	120 (56.3%)	243 (49.2%)
Sophomore	35 (16.4%)	124 (25.1%)
Junior	44 (20.7%)	85 (17.2%)
Senior	14 (6.6%)	42 (8.5%)
Employment Status		X^2 (1, $N = 709$) = .047
Employed for Pay	79 (36.9%)	187 (37.8%)
Not Employed for Pay	135 (63.1%)	308 (62.2%)

Note. First-generation students (FGS) and Continuing-generation students (CGS)

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

To assess whether demographics characteristics varied significantly by first and continuing-generation student status, a series of chi-squared tests were conducted. As seen in Table 5, first-generation students were significantly more likely than continuing-generation students to belong to a minoritized racial/ethnic groups, endorse lower family income, and report no family financial support. Due to the small number of individuals identifying as queer, gay/lesbian, and other, the sexual orientation categories were condensed into two groups: heterosexual and sexual minority. Results of the chi-squared test indicated that continuing-generation students were more likely to endorse sexual minority status compared to first-generation students. Lastly, first- and continuing-generation students did not vary significantly in gender, relationship status, or employment.

Additionally, a series of independent sample t-tests were used to describe mean differences across first-generation and continuing-generation students on measures of social support, discrimination, health behaviors, and mental health outcomes. Results indicated that first-generation students ($M = 49.79$, $SD = 9.43$) reported significantly lower engagement in

preventive health behaviors relative to continuing-generation students ($M = 51.97$, $SD = 9.33$),

$t(675) = 2.78$, $p = .006$. No other significant differences between groups were detected (see Table

6).

Table 6

Mean differences of first- and continuing-generation students

Variables	FGS		CGS		t	p	Cohen's d
	M	*SD*	*M*	*SD*			
Everyday Discrimination	23.12	9.90	22.20	8.89	-1.16	.250	-.100
Social Support	34.05	8.56	33.90	7.94	-.216	.829	-.019
Suicidal Behavior[a]	2.94	4.25	3.71	5.12	1.59	.113	.129
Anxiety/Depression	1.73	.58	1.77	.64	.907	.365	.077
Risk-Taking Health Behavior	31.67	5.83	32.18	6.82	.939	.348	.079
Preventive Health Behavior	49.79	9.43	51.97	9.33	**2.78**	**.006**	**.233**

[a] Represents raw mean, SDs, and ranges

Aim 4

The mediation and moderation analyses from Aims 1 and 2 were run in the first-

generation and continuing-generation student samples separately using PROCESS Macro

(Hayes, 2013). Preliminary mediation model checks for the first-generation student sample

indicated that perceived discrimination did not significantly predict risk-taking behaviors.

Therefore, risk-taking behaviors was excluded from analyses, and a single mediation model was

run examining the mediating role of preventive health behaviors in the first-generation student

sample. In the continuing-generation student sample, perceived discrimination did not

significantly predict preventive health behaviors. Therefore, a single mediation model examining

only risk-taking health behaviors as a mediator was run for the continuing-generation student sample.

A 5,000 bootstrapped sample was used to test the hypothesis that preventive health behaviors mediated the association between perceived discrimination and anxiety/depression in first-generation college students. This model yielded a mean bootstrap estimate of the indirect effect of .001 (95% CI = [-.0004, .0031]). Approximately 19% of the variance in anxiety/depression was accounted for by the predictors (R^2 = .19). Because the 95% confidence interval for the indirect effect included 0, it was concluded that no mediation effect occurred (see Figure 9a).

In the continuing-generation student model, analyses were conducted with bootstrapped samples to assess the hypothesis that risk-taking health behaviors mediated the association between perceived discrimination and anxiety/depression. Results yielded a mean bootstrap estimate of the indirect effect of .001 (95% CI = [.0001, .003]). Given that the 95% confidence interval for the indirect effect did not include 0, it was determined that a significant mediation effect occurred. However, perceived discrimination was still a significant predictor after controlling for the mediator (b = .019, 95% CI = [.013, .026], $p < .001$) suggesting that risk-taking health behaviors partially mediated the effect of perceived discrimination on anxiety/depression (see Figure 9b).

Figure 9

Risk-taking and preventive health behaviors as mediators in the association between perceived discrimination and anxiety/depression

11a. FGS
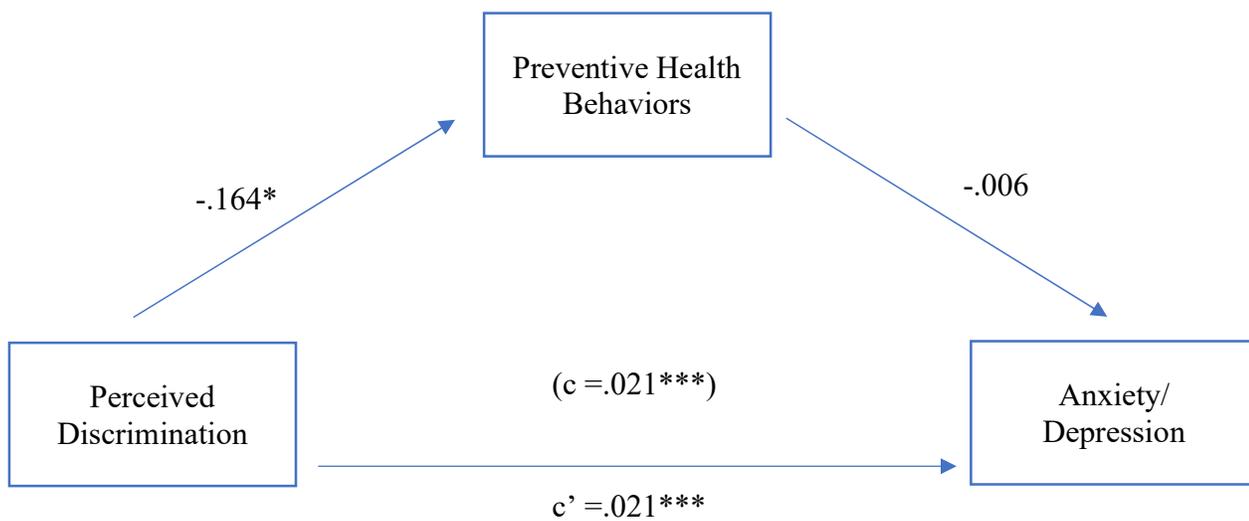
11b. CGS
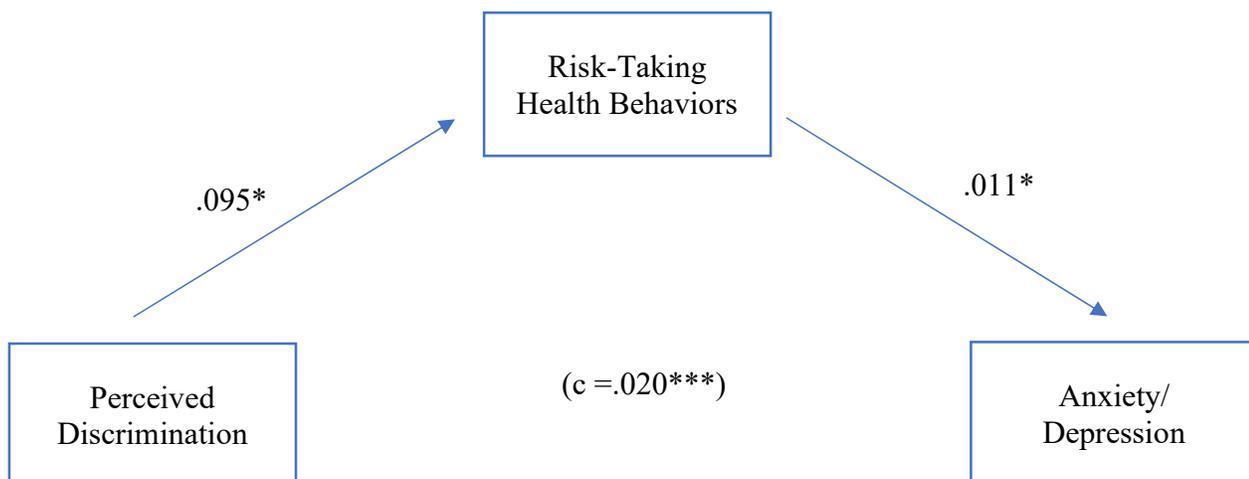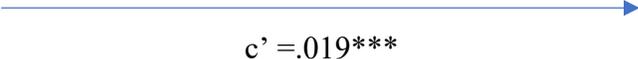
c' =.019***

Note. Figure 9a represents the model in first-generation students (FGS). Figure 9b represents the model in continuing-generation students (CGS).

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

Mediation analyses were repeated for both continuing-generation and first-generation student samples for the suicidal behaviors outcome variable. The first-generation student model yielded a mean bootstrap estimate of the indirect effect of .0007 (95% CI = [-.0001, .0022]) after controlling for identified covariates (e.g., race/ethnicity, academic class, gender, sexual orientation, family income). Since the 95% confident interval for the indirect effect included 0, it was determined that preventive health behaviors did not mediate the association between perceived discrimination and suicidal behaviors (see Figure 10a). In the continuing-generation student model, results yielded a mean bootstrap estimate of the indirect effect of .001 (95% CI = [.0001, .0019]) after controlling for covariates. Since the 95% confidence interval for the indirect effect did not include 0, it was concluded that a significant mediation effect occurred. However, perceived discrimination was still a significant predictor after controlling for the mediator (b = .011, 95% CI = [.006, .015], p < .001) suggesting that risk-taking health behaviors partially mediated the effect of perceived discrimination on suicidal behaviors (see Figure 10b).

Figure 10

Risk-taking and preventive health behaviors as mediators in the association between perceived discrimination and suicidal behavior

12a. FGS

Preventive Health Behaviors
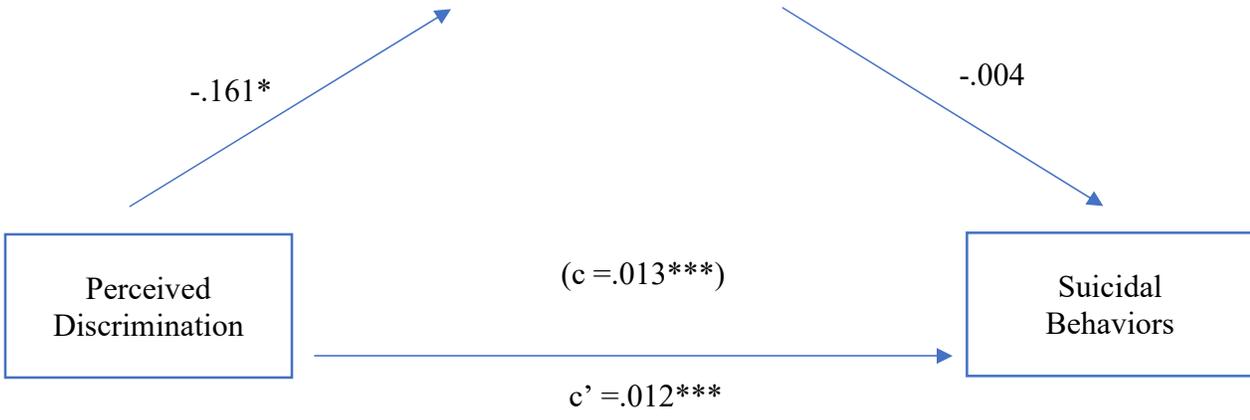
12b. CGS
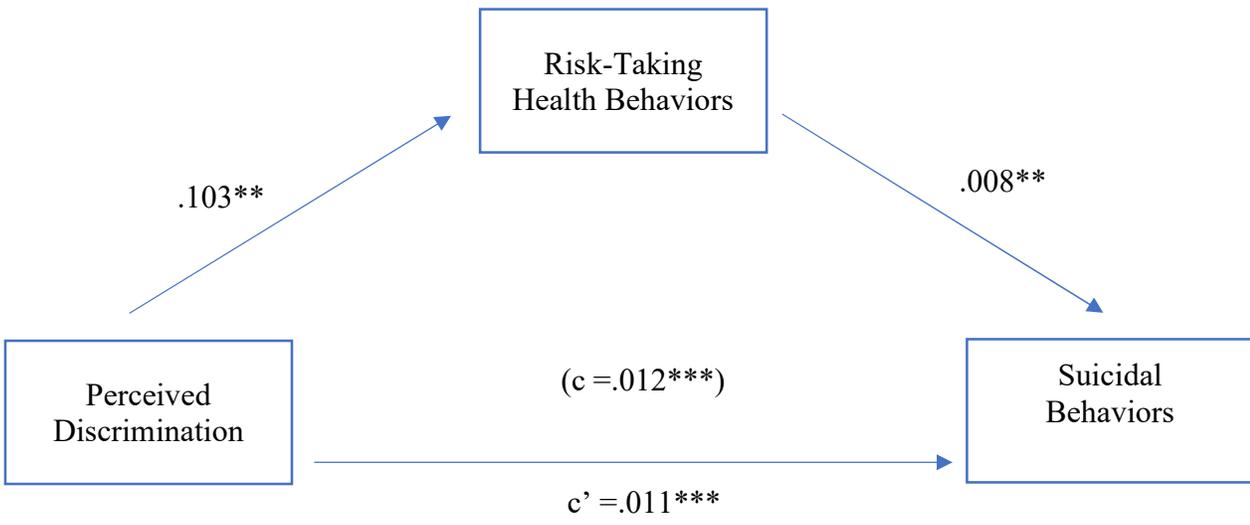
Note. Figure 10a represents the model in first-generation students (FGS). Figure 10b represents the model in continuing-generation students (CGS).

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

We additionally evaluated the hypothesized moderating influence of social support on the association between perceived discrimination, suicidal behaviors, and anxiety/depression in both student samples. Covariates (i.e., race/ethnicity, academic class, gender, sexual orientation, and

family income) for all moderation analyses were entered in model 1. In the continuing-generation student sample, the overall model with anxiety/depression as the main outcome ($F(8, 389) = 13.43$, $p < .001$, $R^2 = .22$) and the model with suicidal behaviors as the main outcome ($F(8, 398) = 8.64$, $p < .001$, $R^2 = .15$) were significant. In the first model, perceived discrimination ($b = .02$, $t(389) = 5.20$, $p < .001$) and social support ($b = -.02$, $t(389) = -6.57$, $p < .001$) were significant predictors of anxiety/depression in continuing-generation students even after controlling for covariates. Perceived discrimination ($b = .008$, $t(398) = 3.27$, $p = .001$) and social support ($b = -.014$, $t(398) = -5.18$, $p < .001$) both significantly predicted suicidal behavior in continuing-generation students as well. However, results indicated that the interactions between perceived discrimination and social support were not statistically significant in either the anxiety/depression ($b = -.0004$, $t(389) = -0.82$, $p = .412$) or suicidal behaviors ($b = .0001$, $t(398) = 0.16$, $p = .870$) outcome models.

Similar results were obtained in the first-generation student moderation models. The overall model with anxiety/depression as the main outcome ($F(8, 156) = 8.62$, $p < .001$, $R^2 = .31$) and the model with suicidal behaviors as the main outcome ($F(8, 161) = 4.93$, $p < .001$, $R^2 = .20$) were significant. In the first model, perceived discrimination ($b = .016$, $t(156) = 3.91$, $p < .001$) and social support ($b = -.023$, $t(156) = -4.89$, $p < .001$) were significant predictors of anxiety/depression after controlling for covariates. In the second model, perceived discrimination ($b = .009$, $t(161) = 3.05$, $p = .003$) and social support ($b = -.011$, $t(161) = -3.19$, $p = .002$) both significantly predicted suicidal behaviors as well. However, results indicated that the interactions between perceived discrimination and social support were not statistically significant in either the anxiety/depression ($b = .0001$, $t(156) = 0.13$, $p = .895$) or suicidal behaviors ($b = .0001$, $t(161) = 0.07$, $p = .948$) outcome models. In sum, these results suggest that social support did not

moderate the associations among discrimination, suicidal behaviors, and anxiety/depression in either first- or continuing-generation student samples.

Discussion

The current study examined published models of associations among perceived discrimination, health behaviors, social support, and mental health outcomes in a college student sample. Overall, a number of the study hypotheses were supported. For example, findings indicated that risk-taking and preventive health behaviors partially mediated associations between perceived discrimination and mental health outcomes (e.g., suicidal behavior, anxiety/depression). It was also determined that social support functioned as a mediator, rather than a moderator, in the association between perceived discrimination and mental health outcomes. In terms of model testing among first-generation and continuing-generation students, group differences were detected in the associations among perceived discrimination, risk-taking behaviors, and preventive health behaviors that impacted mediation model outcomes. Specifically, it was found that only risk-taking health behaviors partially mediated the association between discrimination and mental health outcomes in continuing-generation students, and only preventive health behaviors partially mediated this association in the first-generation student models. Findings from the current study are discussed in further detail below.

Types of Perceived Discrimination & Examination of Covariates

Given that a significant portion of discrimination research and theories to date have been based on samples reporting racial and ethnic discrimination only, this study examined the perceived discrimination-health model within a diverse group of college adults reporting on a wider range of discrimination experiences. This was especially salient given that emerging research has suggested that certain types of discrimination may have more impact on specific

mental health outcomes than others (DeBlaere et al., 2014; Vargas et al., 2020). As such, it was important to consider how our sample characteristics compared to the samples included in historical models and whether these differences may help explain our results. However, since 60% of our sample endorsed multiple types of discrimination, it was not possible to statistically examine the unique influence of discrimination type in our analyses.

In order of the most to least frequently reported experiences of discrimination, students most commonly endorsed discrimination related to gender (41%), age (41%), race (36%), and unspecified physical traits (32%) (see full list in Table 4). It was notable that reported types of discrimination in this sample deviated somewhat from samples used to construct the perceived discrimination-health model. Specifically, the theoretical model examining associations among discrimination, social support, health behaviors, and health outcomes consisted primarily of samples reporting on racial and ethnic discrimination (66% of their meta-analytic sample), followed by gender (17%) and sexual orientation (6%) discrimination (Pascoe & Richman, 2009). Differences between the current sample and samples used in the theoretical model are likely a product of the historical tendency to focus on populations reporting on racial and ethnic discrimination. This emphasis on racial and ethnic discrimination may have led to other experiences of discrimination being less well-studied and thus less represented in large meta-analyses.

To date, there does not appear to be consistent literature discussing the most common types of discrimination experienced on college campuses. However, data from the literature suggests that experiences of sexism, racism, and heterosexism are common (Woodford et al., 2018; Bravo et al., 2021; Milkman et al., 2015). Interestingly, although experiences of ageism were endorsed by 41% of our young adult sample, the literature on ageism in academia tends to

focus almost exclusively on experiences of ageism in older adults and nontraditional students (e.g., Bronstein, 2001; Barragan & Wladkowski, 2020). This highlights a need to further explore youth-directed ageism, both within and outside of academia. Taken together, the types of discrimination experiences reported by our sample support a continued need to expand the populations studied within discrimination-health research. Even within the context of academic institutions alone, it is likely that experiences of discrimination will vary based on specific campus characteristics (e.g., student body, campus size, geographic location).

We also examined demographic differences in mental health outcome measures and compared differences in our sample to the extant literature. Previous studies examining suicidality have generally shown that women and sexual minorities tend to be at greater risk of suicidal behavior when compared to men and heterosexual individuals respectively (Liu et al., 2020; Becker et al., 2018). In our sample, reports of suicidal behavior did not vary significantly based on gender, but our findings did suggest that participants identifying as bisexual reported significantly more suicidal behavior than those identifying as heterosexual. Although, it is difficult to speak to broad clinical implications based on our results, our findings may speak to a need for tailored intervention and support for bisexual students. Research has shown that the establishment of LGBTQ+ support groups and implementation of staff/student training programs geared toward increasing sensitivity and awareness of LGBTQ+ issues may improve campus experiences and decrease risk of suicide in sexual minority students (Goodenow et al., 2006). While many college campuses now utilize LGBTQ+ training programs (e.g., "The Safe Space Program" – Campus Pride, 2022; Safe Zone Project, 2022), suicide risk for sexual minority students is still high (Horwitz et al., 2020). Additional research may be necessary to continue to build on effective suicide prevention strategies for sexual minorities on college campuses.

Additionally, White students in our sample reported greater suicidal behavior than African American and Latinx students. These results contribute to the inconsistent findings in the literature which suggest that, when significant racial/ethnic differences are found, White individuals tend to report more suicidal behavior than most other minoritized groups (Carter et al., 2021; Perez-Rodriguez et al., 2008). Some literature suggests that Latinx and African American individuals may be less likely to experience suicidal ideation due to protective social and cultural factors (e.g., family support, religious values; Fortuna et al., 2007; Perez-Rodriguez et al., 2008). Alternatively, other research has pointed to factors such as differences in cultural norms of reporting when explaining variance in suicidal ideation across different racial and ethnic groups (Fortuna et al., 2007; Perez-Rodriguez et al., 2008). Overall, it is notable that roughly 38% of our total sample stated that they experienced suicidal ideation within the last year, which is consistent with the typically high reports of suicidal behavior in young college adults (Mortier et al., 2018).

These results highlight the continued need to prioritize suicide prevention efforts on college campuses. A recent meta-analytic review examining the impact of college suicide prevention programs found that the commonly employed gatekeeper prevention approaches helped improve knowledge and skills of gatekeepers (e.g., faculty, resident advisors), but it was unclear if this translated to decreased suicidal behavior in students. However, interventions that targeted at-risk students directly were associated with decreased suicidal behavior in targeted students (Wolitzky-Taylor et al., 2019). The continued high percentage of students affected by suicidal behavior may signal a need for the development and optimization of more direct prevention approaches (e.g., just-in-time adaptive interventions).

Health Behaviors as Mediators

As predicted in our first aim, we found that preventive health behaviors partially mediated the association between perceived discrimination and anxiety/depression and between perceived discrimination and suicidal behavior. In other words, our results indicated that the effects of perceived discrimination may increase mental health symptoms through less engagement in preventive health behaviors. When considering individual associations within the overall mediation model, we specifically found that endorsing greater perceived discrimination was associated with lower engagement in preventive health behaviors and also associated with higher levels of anxiety/depression and suicidal behaviors in this sample. These results are consistent with previous literature indicating that perceived discrimination can have a negative impact on preventive health behaviors (Sutin & Terracciano, 2017; Trivedi & Ayanian, 2006; Casagrande et al., 2007) and that poor engagement in preventive health behaviors can negatively impact mental health (Stanton et al., 2021; Wickham et al., 2020; Buttery et al., 2015). Furthermore, these findings support the inclusion of preventive health behaviors as a mediator between discrimination and mental health in historical models.

Given the extensive literature supporting the association between perceived discrimination and engagement in risk-taking behaviors (Unger, 2018; Fahey et al., 2021; Looby et al., 2021; Sutin & Terracciano, 2017) and the link between risk-taking behavior and mental health (Wickham et al., 2020; Buttery et al., 2015; Smout et al., 2020), we hypothesized that risk-taking health behaviors would also mediate the association between perceived discrimination and health outcomes. However, this prediction was not supported by our findings. Although perceived discrimination was significantly associated with higher engagement in risk-taking behaviors, it did not appear that risk-taking behaviors operated as a mechanism through which discrimination influenced mental health outcomes. It may be that risk-taking behaviors

(e.g., exposure to hazardous substances, traffic-related) have more impact on physical health than mental health outcomes within the context of perceived discrimination.

When considering the link between risk-taking behavior and mental health, it is important to note that the association may not be straightforward or unidirectional. For example, risk-taking behaviors may be symptomatic of underlying factors associated with the etiology of certain mental illnesses (e.g., risk-taking behaviors in early childhood have been linked to increased risk of developing mental health issues; Smout et al., 2020). At the same time, risk-taking behavior may also be conceptualized as a form of maladaptive coping in response to the presence of an already established mental health disorder. This maladaptive coping may then further exacerbate the experience of mental illness (e.g., the self-medication model by Markou et al., 1998). In fact, risk-taking as a maladaptive coping tool in response to discrimination is also well-supported in the extant discrimination literature (e.g., Jamieson et al., 2013; Kaplan et al., 2016). In sum, it is likely that the complicated association between risk-taking and mental health was not adequately captured in the current study's statistical model or design. Future researchers studying the discrimination-health model may consider incorporating specific types of risk-taking behavior as a moderator rather than a mediator in the association between discrimination and mental health. Alternatively, the current theoretical model may need to be adapted to account for the potentially bidirectional association between risk-taking and mental health.

Social Support

In accordance with our second aim, we also examined the role of social support as both a moderator and mediator in the association between perceived discrimination and mental health. Given findings in more recent research and the inconsistent support for buffering models, it was hypothesized that social support would mediate the effect of perceived discrimination on

anxiety/depression and suicidality. Consistent with our hypothesis, our findings suggested that social support functioned as a partial mediator. These results align with more recent work which has found evidence of social support as a mediator in the association between discrimination and mental health (Kondrat et al., 2018; Goreis et al., 2020; Gayman & Barragan, 2013). Specifically, our results lend support to Kondrat and colleagues' (2018) mediating hypothesis which states that individuals experiencing discrimination may underutilize their social supports or perceive them as unhelpful; in turn, this leads to a decrease in perceived support and negatively impacts mental health.

While our results align more with the mediating hypothesis, there is still ample support in the literature for the buffering social support hypothesis. To reconcile these conflicting results, it may be helpful to consider the difficulty in creating an all-encompassing definition for a construct as complex as social support. Difficulties establishing a universal conceptual definition have inevitably led to measurements of social support that only look at certain aspects of the construct and do not capture the complete picture. For example, measurements in this study focused exclusively on perceptions of the availability of emotional, tangible, appraisal, and self-esteem support. However, other measures (e.g., Perceived Support Scale; Krause & Borawski-Clark, 1995) focus on an individual's perceptions of the social support they *have* received. Although studies suggest that both perceived availability and actual received social support can both have a positive impact on coping with stress and mental health (Taylor, 2011; Wang et al., 2014; Juang et al., 2016; Shi, 2021), the different aspects of social support may operate through fundamentally different mechanisms to influence the association between discrimination and mental health.

First- & Continuing-Generation Students' Demographic Differences

Aims 3 of the current study focused on exploring demographic differences in first-and continuing-generation student samples. As predicted based on previous literature and current student body statistics (US Census Bureau, 2016; SEMSS, 2021), the first-generation student sample was comprised of a relatively larger percentage of racial and ethnic minorities with lower family income and less family financial support. It was noted that the continuing-generation-student sample was comprised of a somewhat larger portion of sexual minorities. Interestingly, first-generation students in our sample differed from samples described in the literature in several distinct ways. Specifically, they 1) did not vary in employment, 2) were not more likely to have children/dependents, 3) not more likely to be female, 4) not more likely to live off-campus, and 5) were not more likely to be married. Published reports suggest that first-generation students tend to be older than continuing generation students (Hottinger & Rose, 2006), and this factor may be why first-generation students are often more likely to work full-time, have dependents, be married and live off-campus. It is possible that the restriction of the current study's sample to a young adult age range (18-26 years) explains these demographic observations.

In addition to demographic differences, we examined differences in first- and continuing-generation students' reports on social support, discrimination, health behaviors, and mental health outcomes. We hypothesized that first-generation students would report lower levels of perceived social support, higher levels of perceived discrimination, and worse mental health outcomes relative to continuing-generation students. However, our results suggested that the two student samples did not differ significantly across any of these measures. This is interesting given that first-generation student status has been associated with lower social support and greater symptoms of depression and anxiety in the literature (Jenkins et al., 2013; Mehta et al.,

2011; Stebleton et al., 2014; Noel et al., 2021). While few studies specifically compare discrimination experiences of first- and continuing-generation students, many studies have discussed the fact that first-generation students often come from marginalized social class backgrounds and experience various forms of discrimination and marginalization within academic settings (e.g., Gray et al. 2017; Havlik et al., 2017). As such, it was expected that first-generation students in our sample might endorse greater perceived discrimination than continuing-generation students.

These unexpected findings may be partially explained by differences in our first-generation student sample when compared to typical sample characteristics in the literature (as discussed above). It is possible that being a similar age as continuing generation students, having similar housing, and comparable external responsibilities (in terms of work, relationship status, and dependents) may help with the social and cultural transition to college and thus reduce mental health impact. In a similar fashion, university culture or location may also help explain our findings. The current sample was selected from a large, mid-Atlantic urban university with a diverse student body. Many first-generation students report a sense of being othered and cultural mismatching in academic settings (Gray et al., 2017; Havlik et al., 2017; Covarrubias et al., 2019) that likely contributes to low perceptions of social support resources and can thereby increase mental health risk. It is possible that universities with diverse student bodies and inclusive cultural climates may reduce this sense of "otherness," facilitate social and campus resource utilization, and reduce mental health risk for first-generation students. As we learn more about ways to support first-generation students, more universities may be implementing and improving access to resources for first-generation students to help mitigate mental health and social support risk-factors.

Although first-generation student status was not associated with lower social support or greater discrimination and mental health risk, they did report significantly lower engagement in preventive health behaviors relative to their continuing-generation student peers. This may be explained by the fact that many aspects of preventive health behaviors assessed by the HBCL (e.g., eating a balanced diet, accessing health care professionals, utilizing free time for relaxation) are dependent on access to resources (e.g., income and free-time). Previous research suggests that first-generation students are more likely to come from lower-income backgrounds and also more likely to enroll in college part-time due to external obligations such as work and family (Pascarella et al., 2004; Hottinger & Rose, 2006). While first-generation students in our sample were not more likely to be employed than continuing generation students, they did report receiving less family financial support and coming from lower income backgrounds. This may mean that first-generation students are less likely to have resources to attend medical appointments, afford nutritionally-balanced meals, or access student health services (often a benefit for full-time students only).

Discrimination-Health Models in First- & Continuing-Generation Students

Social Support

Our final aim focused on exploring elements of historical discrimination-health models within first- and continuing-generation student samples independently. Similar to findings from the entire student sample, social support was not found to moderate the association between discrimination and mental health for either first- or continuing-generation students. As discussed earlier, this is likely attributed to differences in measurement and conceptualization of social support as a construct. Specifically, it may be that perceived availability of emotional, tangible, appraisal, and self-esteem social support (as measured in the current study), do not buffer the

negative impact of perceived discrimination on mental health. These forms of social support may instead be better conceptualized as factors that help explain the association between discrimination and health.

Perceived Discrimination & Health Behaviors

Interestingly, while conducting preliminary mediation models checks for first- and continuing-generation samples, it was determined that perceived discrimination predicted preventive health behaviors but not risk-taking behavior in first-generation students. The inverse of this was determined to be true for continuing-generation students. While first-generation students traditionally possess some characteristics (e.g., increased involvement in family life, full-time jobs) that tend to lower engagement in risk-taking behaviors (Leebens & Williamson, 2017), this was not the case in our sample.

Qualitative research conducted by Vasquez-Salgado and colleagues (2015), as well as a recent study by Covarrubias and colleagues (2019), point out that first-generation students describe experiencing significant demands on their time to fulfill family obligations. Although this cultural expectation of high family involvement may contribute to difficulty in academic success, it may be that this continued connection to family and associated responsibilities (e.g., financial support, taking care of siblings, physical care; Covarrubias et al., 2019) serve as protective factors against discrimination's negative impact on risk-taking behavior. Additionally, other factors associated with resilience and persistence in first-generation students in academia may offer insight. Specifically, first-generation students have described previous experiences with adversity as contributing to their sense of responsibility, and further identified family as a motivating factor to persist academically even in the face of hardship (Covarrubias et al., 2019; Havlik et al., 2017; Gray et al., 2017). This resilience and motivation-focused coping approach

may also help buffer against the impact of discrimination on risk-taking. On the other hand, continuing generation students are more likely to engage in risk-taking behavior (e.g., substance use; Swisher & Dennison, 2020) than first-generation students and also more often come from cultural family backgrounds that align with academic cultures of independence (Stephens et al., 2012). As such, continuing-generation students may be more at risk of engagement in risky health behavior without the buffering influence of family connection/obligation. Thus, continuing-generation students may be more likely to engage in risk-taking health behaviors when experiencing discrimination than first-generation students.

Although first-generation students might harness resilience and family motivation to persevere (Covarrubias et al., 2019; Havlik et al., 2017; Gray et al., 2017) factors outside of their control might have a more direct and unavoidable influence on their engagement in preventive health behaviors. For example, as mentioned previously, first-generation students in this sample reported lower family income and less family financial support. These factors, coupled with family obligations and part-time enrollment status may create scenarios where first-generation students are less able to access medical care, relaxing free-time, and healthy food options. Unlike their first-generation student peers, continuing-generation students are more likely to enroll full-time (with access to student health), come from higher income backgrounds, and receive financial support from their families. Thus, continuing-generation students may encounter fewer obstacles when attempting to participate in health-promoting behavior. In sum, it may be that perceived discrimination was significantly associated with lower preventive health behaviors in only first-generation students because of the additional effort necessary to overcome access barriers relative to their continuing-generation peers.

Mediation Models

When examining mediation models in first-generation students, we found that neither risk-taking nor preventive health behaviors mediated the association between discrimination and mental health for first-generation students. The current study was powered to detect medium-to-large effects when conducting mediation analyses for first- and continuing-generation student samples separately. Given that small effects were detected in the combined sample, it is likely that the current study was insufficiently powered to detect small effects within the first-generation student sample.

In the continuing-generation sample, it was determined that risk-taking behaviors partially mediated the association between discrimination and all mental health outcomes. This is consistent with recent work by Yang and colleagues (2019) who examined the longitudinal impact of a variety of discrimination experiences over the course of adolescence to middle adulthood. Their results suggested that discrimination experienced in adolescence was linked to increased risk-taking behaviors in young adulthood, which then impacted physical and mental health in middle adulthood. While our cross-sectional data cannot speak to causality, our results do lend support to literature suggesting that perceived discrimination may operate through increased risk-taking behaviors to influence mental health outcomes. Furthermore, results of our exploratory analyses suggest that further examination of these pathways in larger samples of first-generation students is warranted.

Limitations

Although our study contributes novel findings to the extant literature, several methodological limitations should be noted. The cross-sectional design of our study does not allow us to generate inferences about causality. Specifically, results of our mediation analyses are only suggestive of the pathways through which perceived discrimination impacts mental

health. However, given the challenges associated with experimentally manipulating

discrimination experiences, many of the studies used to develop discrimination-health theoretical

models have been cross-sectional in design.

The current study sample was recruited from a large, urban, mid-Atlantic university with

a diverse student body. As such, results may not generalize to populations outside of this

environment, or to different types of college campuses (e.g., small liberal arts colleges, public vs.

private). For example, both the amount and type of discrimination experienced may vary based

on the diversity and culture of the campus and the area where the college is located.

Alternatively, rural environments may impact a student's ability to engage in preventive health

behavior (e.g., limited access to food resources, long drive to medical providers). In addition to

the impact of college type, 72.2% of our sample was female and all participants were recruited

using a participant pool available to students taking introductory psychology courses. Although

we controlled for gender in all analyses, these sample demographics and recruitment methods

may impact generalizability. Furthermore, we encountered issues of low reliability for the self-

esteem subscale of the ISEL and the risk-taking subscale of the HBCL. Specifically, Cronbach's

alpha fell just below the accepted value of 0.7 (Cortina, 1993). As such, all items in these

subscales may not all be capturing the same construct.

Another potential factor to consider when interpreting our results pertains to differences

in types of discrimination reported in our sample compared to those in samples used to construct

the discrimination-health theoretical model. Emerging evidence suggests that certain types of

discrimination may be linked to greater risk of mental health outcomes (e.g., heterosexism linked

to greater mental health risk than racism; DeBlaere et al., 2014; Vargas et al., 2020). However,

there is little other information in the literature about the unique impact of other forms of

discrimination (aside from heterosexism) on health behaviors or mental health outcomes. Regardless, it is possible that differences in types of discrimination between our sample and historical models may have impacted our results. We were unable to control for type of discrimination in our analyses due to the high percentage of our sample reporting multiple forms of discrimination.

The significant portion of our sample reporting multiple types of discrimination is another factor to consider. Samples used in the creation of the discrimination-health model seem to have reported on only one form of discrimination. This difference is particularly notable since poorer mental health outcomes are associated with those experiencing multiple forms of discrimination when compared to those reporting on only one type of discrimination (Gayman & Barragan, 2013; Grollman, 2012; Grollman, 2014). Despite sample differences in the types of discrimination experienced, our findings still supported that preventive health behaviors partially mediated the association between perceived discrimination and mental health outcomes as theorized in the historical model. However, as discussed previously, certain predicted elements of the model were not supported (i.e., social support as a moderator and risk-taking behaviors as a mediator). We did not control for multiple types of discrimination and as a result this may have influenced our findings.

Future Directions and Implications

Overall, our sample featuring individuals reporting multiple forms of discrimination, and various forms of discrimination apart from racial and ethnic discrimination further contributes to the generalizability of certain aspects of the perceived discrimination-health theoretical model. Specifically, our study supported the mediating role of preventive health behaviors in the association of perceived discrimination and mental health in college students. Given that risk-

taking health behavior did not function as a mediator in our study examining mental health outcomes, future research should seek to examine its role as a potential mediator in the discrimination-physical health association. It may also be beneficial to consider the complex nature of risk-taking behavior and tease apart how specific types of risk-taking (e.g., substance use, sexual activity, driving habits) may function differently (e.g., mediator vs. a moderating coping response) to influence discrimination's impact on health. Given that there is both a historic and continued reliance on cross-sectional study design, future researchers may wish to employ longitudinal designs to further contribute to evidence for a temporal link between discrimination, health behaviors, and health outcomes.

It is also vital that future research continues to examine discrimination-health models across a wider range of populations reporting on a broader spectrum of discrimination experiences. Although there has been more emphasis placed on intersectionality types of discrimination recently, much of discrimination research has been rooted in studies examining racial and ethnic discrimination only. While our study supported some elements of the discrimination-health model, other elements were not supported and may have been influenced by sample demographics and differing types of discrimination. Additional research is warranted to further examine if current theorized pathways differ in groups experiencing discrimination not associated with one's race or ethnicity.

Results from our exploratory analyses conducted with first- and continuing-generation students provided evidence that these students may experience different health behavior impacts as a result of discrimination. As such, it is recommended that future studies recruit a larger sample of first-generation students to further explore the associations of discrimination, health behavior, and mental health outcomes further. Given that our first-generation students did not

reflect demographics of first-generation students often reported in the literature, it may be appropriate to remove young adult age caps for recruitment of first-generation students as they tend to be older than their continuing-generation peers. Lastly, future research should also examine the role of college type/environment when examining discrimination-health models in college students.

Conclusions

In sum, our findings suggest that both preventive health behavior and social support mediate the impact of discrimination on mental health outcomes (e.g., anxiety/depression and suicidal behaviors) in young adult college students. Additionally, results of our exploratory aims suggest that first- and continuing-generation college students may experience different health behavior impacts associated with perceived discrimination. Despite the limitations associated with the current study, our results provide further support for the generalizability of the discrimination-health model to college students reporting a wide array of discrimination experiences. Further research is recommended to continue exploring the generalizability of the discrimination-health model across a broader range of populations. Finally, additional research comparing the associations of discrimination, health behavior, and mental health is warranted in first- and continuing-generation student populations. Insights into differences in these populations may inform university programs and interventions designed to support first-generation students.

References

Ajrouch, K. J., Reisine, S., Lim, S., Sohn, W., & Ismail, A. (2010). Perceived everyday

discrimination and psychological distress: does social support matter? *Ethnicity &*

health, *15*(4), 417–434. https://doi.org/10.1080/13557858.2010.484050

Anderson, K. F. (2013). Diagnosing discrimination: Stress from perceived racism and mental and

physical health effects. *Sociological Inquiry*, *83*(1), 55-81. doi: 10.1111/j.1475-

682X.2012.00433.x

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social

psychological research: Conceptual, strategic, and statistical considerations. *Journal of*

Personality and Social Psychology, *51*(6), 1173–1182. https://doi.org/10.1037/0022-

3514.51.6.1173

Barragan, C., & Wladkowski, S. (2020). Ageism on Campus: Opportunities to Include Age in

Diversity and Inclusion Efforts. *Innovation in Aging.*, *4*(Suppl 1), 7. doi:

10.1093/geroni/igaa057.021.

Becker, S. P., Holdaway, A. S., & Luebbe, A. M. (2018). Suicidal behaviors in college students:

Frequency, sex differences, and mental health correlates including sluggish cognitive

tempo. *Journal of Adolescent Health*, *63*(2), 181-188.

https://doi.org/10.1016/j.jadohealth.2018.02.013

Bhattacharya, A. (2018). Rise in Campus Hate Crimes. *Diverse Issues in Higher Education,*

35(3), 5-5.

Bianchi, F. T., Zea, M. C., Poppen, P. J., Reisen, C. A., & Echeverry, J. J. (2004). Coping as a

mediator of the impact of sociocultural factors on health behavior among HIV-positive

Latino gay men. *Psychology & Health*, *19*(1), 89-101.

https://doi.org/10.1080/08870440410001655340

Bravo, A. J., Wedell, E., Villarosa-Hurlocker, M. C., Looby, A., Dickter, C. L., Schepis, T. S., & Stimulant Norms and Prevalence Study Team. (2021). Perceived racial/ethnic discrimination among young adult college students: Prevalence rates and associations with mental health. *Journal of American College Health*. Advance online publication. doi: 10.1080/07448481.2021.1954012

Bronstein, P. (2001). Older women in academia: Contemporary history and issues. *Journal of Women's Histor*y, *12*(4), 184-201. doi:10.1353/jowh.2001.0004.

Brown, G. (2002). *A review of suicide assessment measures for intervention research with adults and older adults.* Suicide Prevention Resource Center. https://sprc.org/sites/default/files/migrate/library/BrownReviewAssessmentMeasuresAdu ltsOlderAdults.pdf

Buttery, A. K., Mensink, G. B. M., & Busch, M. A. (2014). Healthy behaviors and mental health: findings from the German Health Update (GEDA). *European Journal of Public Health*, *25*(2), 219-225. https://doi.org/10.1093/eurpub/cku094

Campus Pride. (2022). *Safe Space Program.* https://www.campuspride.org/SafeSpace/

Carter, S. P., Campbell, S. B., Wee, J. Y., Law, K. C., Lehavot, K., Simpson, T., & Reger, M. A. (2021). Suicide attempts among racial and ethnic groups in a nationally representative sample. *Journal of Racial and Ethnic Health Disparities*, Advance online publication. doi: 10.1007/s40615-021-01115-3.

Carver, C. S., & Vargas, S. (2011). Stress, coping, and health. In H. S. Friedman (Ed.), *The Oxford handbook of health psychology* (pp. 162-188). Oxford University Press.

Casagrande, S. S., LaVeist, T. A., Gaskin, D. J., & Cooper, L. A. (2007). Perceived

discrimination and adherence to medical care in a racially integrated community. *Journal of General Internal Medicine*, *22*, 389-395. https://doi.org/10.1007/s11606-006-0057-4

Clark, R., Anderson, N. B., Clark, V. R., & Williams, D. R. (1999). Racism as a stressor for

African Americans: A biopsychosocial model. *American Psychologist*, *54*(10), 805-816.

https://doi.org/10.1037/0003-066X.54.10.805

Cohen, S., Mermelstein, R., Kamarck, T., & Hoberman, H. (1985). Measuring the functional

components of social support. In I. G. Sarason & B. R. Sarason (Eds.), *Social support: Theory, research and application* (pp. 73-94). Springer, Dordrecht.

Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis.

Psychological Bulletin, *98*(2), 310–357. https://doi.org/10.1037/0033-2909.98.2.310

Committee on Improving the Health, Safety, and Well-Being of Young Adults (CIHSWBYA),

Board on Children, Youth, and Families, Institute of Medicine, & National Research

Council. (2015). *Investing in the health and well-being of young adults* (R. J. Bonnie, C.

Stroud, & H. Breiner, Eds.). The National Academies Press.

https://www.ncbi.nlm.nih.gov/books/NBK284795/

Conley, C. S., Shapiro, J. B., Huguenel, B. M., & Kirsch, A. C. (2018). Navigating the college

years: Developmental trajectories and gender differences in psychological functioning,

cognitive-affective strategies, and social well-being. *Emerging Adulthood*, *8*(2), 103-117.

https://doi-org.proxy.library.vcu.edu/10.1177/2167696818791603

Cortina, J. M. (1993). What is coefficient alpha? An examination of theory and applications.

Journal of applied psychology, *78*(1), 98.

Covarrubias, R., Valle, I., Laiduc, G., & Azmitia, M. (2019). "You never become fully

    independent": Family roles and independence in first-generation college students.

    Journal of Adolescent Research, *34*(4), 381-410.

    https://doi.org/10.1177/0743558418788402

DeBlaere, C., Brewster, M. E., Bertsch, K. N., DeCarlo, A. L., Kegel, K. A., & Presseau, C. D.

    (2014). The Protective Power of Collective Action for Sexual Minority Women of Color:

    An Investigation of Multiple Discrimination Experiences and Psychological Distress.

    Psychology of Women Quarterly, 38(1), 20–32.

    https://doi.org/10.1177/0361684313493252

Delistamati, E., Samakouri, M., Davis, E., Vorvolakos, T., Xenitidis, K., & Livaditis, M. (2006).

    Interpersonal Support Evaluation List (ISEL) – College Version: Validation and

    application in a Greek sample. *International Journal of Social Psychiatry*, *52*(6), 552-

    560. doi: 10.1177/0020764006074184.

Eastman-Mueller, H., Fu, T-C., Dodge, B. M., & Herbenick, D. (2020). The relationship between

    college students' campus sexual health resource utilization and self-reported STI testing:

    Findings from an undergraduate probability survey. *Journal of American College Health*,

    Advance online publication. doi: 10.1080/07448481.2020.1775607.

Fahey, M. C., Morris, J. D., Robinson, L. A., & Pebley, K. (2021). Associations between

    perceived discrimination and vaping among college students. *Substance Use & Misuse*,

    56(5), 738-741. https://doi-org.proxy.library.vcu.edu/10.1080/10826084.2021.1887250

Fortuna, L. R., Perez, D. J., Canino, G., Sribney, W., & Alegria, M. (2007). Prevalence and

    correlated of lifetime suicidal ideation and attempts among Latino subgroups in the

    United States. *Journal of Clinical Psychiatry*, *68*(4), 572-581. doi: 10.4088/jcp.v68n0413

Fritz, M. S., & MacKinnon, D. P. (2007). Required sample size to detect the mediated effect. *Psychological Science*, *18*(3), 233-239. doi:10.1111/j.1467-9280.2007.01882.x.

Gayman, M. D., & Barragan, J. (2013). Multiple perceived reasons for major discrimination and depression. *Society and Mental Health*, *3*(3), 203-220. https://doi.org/10.1177/2156869313496438

Glaesmer, H., Braehler, E., Grande, G., Hinz, A., Petermann, F., & Romppel, M. (2014). The German version of the Hopkins Symptoms Checklist-25 (HSCL-25) – Factorial structure, psychometric properties, and population-based norms. *Comprehensive Psychiatry*, *55*(2), 396-403. https://doi.org/10.1016/j.comppsych.2013.08.020

Goodenow, C., Szalacha, L., & Westheimer, K. (2006). School support groups, other school factors, and the safety of sexual minority adolescents. *Psychology in the Schools*, *43*(5), 573-589. doi: 10.1002/pits.20173

Goreis, A., Asbrock, F., Nater, U. M., & Mewes, R. (2020). What mediates the relationships between ethnic discrimination and stress? Coping strategies and perceived social support of Russian immigrants in Germany. *Frontiers in Psychology*, *11*, 557148. https://doi.org/10.3389/fpsyt.2020.557148

Gray, B., Johnson, T., Kish-Gephart, J., & Tilton, J. (2017). Identity work by first-generation students to counteract class-based microaggressions. *Organization Studies*, *39*(9), 1227-1250. https://doi-org.proxy.library.vcu.edu/10.1177/0170840617736935

Grollman, E. A. (2012). Multiple forms of perceived discrimination and health among adolescents and young adults. *Journal of Health and Social Behavior, 53*(2), 199-214. https://doi.org/10.1177/0022146512444289

Grollman, E. A. (2014). Multiple disadvantaged statuses and health: the role of multiple forms of

discrimination. *Journal of Health and Social Behavior*, *55*(1), 3-19.

https://doi.org/10.1177/0022146514521215

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. 10.1016/j.drugalcdep.2010.11.002

Havlik, S., Pulliam, N., Malott, K., & Steen, S. (2017). Strengths and struggles: first-generation

college-goers persisting at one predominately white institution. *Journal of College

Student Retention: Research, Theory & Practice*, *22*(1), 118-140.

https://doi.org/10.1177/1521025117724551

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A

regression-based approach* (2nd ed.). (T. D. Little, Ed.). Guilford Publications.

Hong, J. H., Talavera, D. C., Odafe, M. O., Barr, C. D., & Walker, R. L. (2018). Does purpose in

life or ethnic identity moderate the association for racial discrimination and suicide

ideation in racial/ethnic minority emerging adults? *Cultural Diversity and Ethnic

Minority Psychology*, Advance online publication. doi:10.1037/cdp0000245.

Horowitz, J. M., Parker, K., Brown, A., & Cox, K. (2020, Oct. 6). *Amid national reckoning,

Americans divided on whether increased focus on race will lead to major policy change*.

Pew Research Center. https://www.pewresearch.org/social-trends/2020/10/06/amid-

national-reckoning-americans-divided-on-whether-increased-focus-on-race-will-lead-to-

major-policy-change/

Horwitz, A. G., Berona, J., Busby, D. R., Eisenberg, D., Zheng, K., Pistorello, J., Albucher, R.,

Coryell, W., Favorite, T., Walloch, J. C., & King, C. A. (2020). Variation in suicide risk

among subgroups of sexual and gender minority college students. *Suicide and Life-Threatening Behavior*, *50*(5), 1041-1053. https://doi.org/10.1111/sltb.12637

Hottinger, J. A., & Rose, C. P. (2006). First-generation college students. In L. A. Gohn & G. R. Albin (Eds.), *Understanding college student subpopulations: A guide for student affairs professionals* (pp. 115-134). NASPA.

Inzlicht, M., McKay, L., & Aronson, J. (2006). Stigma as ego depletion: How being the target of prejudice affects self-control. *Psychological Science*, *17*(3), 262-269. doi: 10.1111/j.1467-9280.2006.01695.x.

Jamieson, J. P., Koslov, K., Nock, M. K., & Mendes, W. B. (2013). Experiencing discrimination increases risk taking. *Psychological Science*, *24*(2), 131-139. https://doi.org/10.1177/0956797612448194

Jenkins, S. R., Belanger, A., Connally, M. L., Boals, A., & Duron, K. M. (2013). First-generation undergraduate students' social support, depression, and life satisfaction. *Journal of College Counseling*, *16*(2), 129-142. https://doi.org/10.1002/j.2161-1882.2013.00032.x

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 or College Student Development*, *57*(4), 380-394. https://doi.org/10.1353/csd.2016.0048

Kaplan, K. C., Hormes, J. M., Wallace, M., Rountree, M., & Theall, K. P. (2016). Racial discrimination and HIV-related risk behaviors in southeast Louisiana. *American Journal of Health Behavior*, *40*(1), 132-143. https://doi.org/10.5993/AJHB.40.1.15

Kim, H.-Y. (2013). Statistical noted for clinical researchers: assessing normal distribution (2) using skewness and kurtosis. *Restorative Dentistry & Endodontics*, *38*(1), 52-54. https://doi.org/10.5395/rde.2013.38.1.52

Kondrat, D. C., Sullivan, W. P., Wilkins, B., Barrett, B. J., & Beerbower, E. (2018). The mediating effect of social support on the relationship between the impact of experienced stigma and mental health. Stigma and Health, 3(4), 305–314. https://doi.org/10.1037/sah0000103

Krause, N., & Borawski-Clark, E. (1995). Social class differences in social support among older adults. *The Gerontologist*, *35*, 498-508.

Krieger, N., Smith, K., Naishadham, D., Hartman, C., & Barbeau, E.M. (2005). Experiences of discrimination: validity and reliability of a self-report measure for population health research on racism and health. *Social Science & Medicine*, *61*(7),1576-1596. doi: 10.1016/j.socscimed.2005.03.006.

Kwate, N. O. A., Valdimarsdottir, H. B., Guevarra, J. S., & Bovbjerg, D. H. (2003). Experiences of racist events are associated with negative health consequences for African American women. *Journal of the National Medical Association*, *95*(6), 450-460.

Leebens, P. K., & Williamson, E. D. (2017). Developmental psychopathology: Risk and resilience in transition to young adulthood. *Child and Adolescent Psychiatric Clinics of North America*, *26*(2), 143-156. https://doi.org/10.1016/j.chc.2016.12.001

Linehan, M. (1996). Suicidal Behaviors Questionnaire (SBQ-14). Unpublished instrument, Department of Psychology, University of Washington, Seattle.

Little, R. A. (1988). A test of missing completely at random for multivariate data with missing values. *Journal of the American Statistical Association*, *83*(404), 1198-1202.

Liu, C. H., Stevens, C., Wong, S. H. M., Yasui, M., & Chen, J. A. (2019). The prevalence and predictors of mental health diagnoses and suicide among U.S. college students: Implications for addressing disparities in service use. *Depression and Anxiety*, *36*(1), 8-17. doi: 10.1002/da.22830

Liu, R. T., Walsh, R. F. L., Sheehan, A. E., Cheek, S. M., & Carter, S. M. (2020). Suicidal ideation and behavior among sexual minority and heterosexual youth: 1995-2017. *Pediatrics*, *145*(3), e20192221. https://doi.org/10.1542/peds.2019-2221

Looby, A., Prince, M. A., Villarosa-Hurlocker, M. C., Conner, B. T., Schepis, T. S., Bravo, A. J., & Stimulant Norms and Prevalence (SNAP) Study Team. (2021). Young adult use, dual use, and simultaneous use of alcohol and marijuana: An examination of differences across use status on marijuana use context, rates, and consequences. *Psychology of Addictive Behaviors*, *35*(6), 68-690. https://doi.org/10.1037/adb0000742

Markou, A., Kosten, T. R., & Koob, G. F. (1998). Neurobiological similarities in depression and drug dependence: a self-medication hypothesis. *Neuropsychopharmacology*, *18*(3), 135-174. doi: 10.1016/S0893-133X(97)00113-9

Mayo, D., & Le, B. (2021). Perceived discrimination and mental health in college students: A serial indirect effects model of mentoring support and academic self-concept. *Journal of American College Health*. Advance online publication. DOI: 10.1080/07448481.2021.1924725

McArdle, N., Ward, S. V., Bucks, R. S., Maddison, K., Smith, A., Huang, R-C., Pennell, C. E., Hillman, D. R., & Eastwood, P. R. (2020). The prevalence of common sleep disorders in young adults: a descriptive population-based study. *Sleep*, *43*(10), zsaa072. doi: 10.1093/sleep/zsaa072

Mehta, S. S., Newbold, J. J., & O'Rourke, M. A. (2011). Why do first-generation students fail? *College Student Journal*, *45*(1), 20-35.

Michaels, E., Thomas, M., Reeves, A., Price, M., Hasson, R., Chae, D., & Allen, A. (2019). Coding the Everyday Discrimination Scale: implications for exposure assessment and associations with hypertension and depression among a cross section of mid-life African American women. *Journal of Epidemiology and Community Health*, *73*(6), 577-584. doi: 10.1136/jech-2018-211230

Milkman, K. L., Akinola, M., & Chugh, D. (2015). What happens before? A field experience exploring how pay and representation differently shape bias on the pathway into organizations. *Journal of Applied Psychology*, *100*(6), 1678-1712. https://doi.org/10.1037/apl0000022

Minami, T., Davies, D. R., Tierney, S. C., Bettmann, J. E., McAward, S. M., Averill, L. A., Huebner, L. A., Weitzman, L. M., Benbrook, A. R., Serlin, R. C., & Wampold, B. E. (2009). Preliminary evidence on the effectiveness of psychological treatments delivered at a university counseling center. *Journal of Counseling Psychology*, *56*(2), 309-320. https://doi.org/10.1037/a0015398

Mortier, P., Cuijpers, P., Kiekens, G., Auerbach, R. P., Demyttenaere, K., Green, J. G., Nock, M. K., & Bruffaerts, R. (2018). The prevalence of suicidal thoughts and behaviours among college students: A meta-analysis. *Psychological Medicine*, *48*(4), 554-565. doi:10.1017/S0033291717002215

Mossakowski, K. N., & Zhang, W. (2014). Does social support buffer the stress of discrimination and reduce psychological distress among Asian Americans? *Social Psychology Quarterly*, *77*(3), 273-295. https://doi.org/10.1177/0190272514534271

National Center for Education Statistics. (2021, May). *Hate crime incidents at postsecondary institutions*. https://nces.ed.gov/programs/coe/indicator/a22

National Health and Medical Research Council. (2020). *Australian Guidelines to reduce health risks from drinking alcohol.* Commonwealth of Australia, Canberra.

Noel, J. K., Lakhan, H. A., Sammartino, C. J., & Rosenthal, S. R. (2021). Depressive and anxiety symptoms in first generation college students. *Journal of American College Health*, DOI: 10.1080/07448481.2021.1950727

Osman, A., Bagge, C.L., Gutierrez, P.M., Konick, L.C., Kooper, B.A., & Barrios, F.X. (2001). The Suicidal Behaviors Questionnaire-Revised (SBQ-R): Validation with clinical and nonclinical samples. *Assessment*, *8*(4), 443-454. doi: 10.1177/107319110100800409.

Paradies, Y. A. (2006). A systematic review of empirical research on self-reported racism and health. *International Journal of Epidemiology*, *35*(4), 888-901. https://doi.org/10.1093/ije/dyl056

Parloff, M.B., Kelman, H.C., Frank, J.D. (1954). Comfort, effectiveness, and self-awareness as criteria for improvement in psychotherapy. *American Journal of Psychiatry, 111*(5), 343-352. doi: 10.1176/ajp.111.5.343.

Pascarella, E. T., Pierson, C. T., Wolniak, G. C., & Terenzini, P. T. (2004). First-generation college students: Additional evidence on college experiences and outcomes. *The Journal of Higher Education*, *75*(3), 249-284. https://doi.org/10.1080/00221546.2004.11772256

Pascoe, E. A., & Richman, L. S. (2009). Perceived discrimination and health: A meta-analytic review. *Psychological Bulletin*, *135*(4), 531-554. doi: 10.1037/a0016059

Pearce, J., Rafiq, S., Simpson, J., & Varese, F. (2019). Perceived discrimination and psychosis: a systematic review of the literature. *Social Psychiatry and Psychiatric Epidemiology*, *54*, 1023-1044. https://doi.org/10.1007/s00127-019-01729-3

Perez-Rodriguez, M. M., Baca-Garcia, E., Oquendo, M. A., & Blanco, C. (2008). Ethnic differences in suicidal ideation and attempts. *Prime Psychiatry*, *15*(2), 44-53.

Postsecondary National Policy Institute. (2021, Feb.) *Factsheets: First-generation students*. https://pnpi.org/first-generation-students/

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

Prince, M., Patel, V., Saxena, S., Maj, M., Maselko, J., Phillips, M. R., & Rahman, A. (2007). No health without mental health. *The Lancet*, *370*(9590), 859-877. https://doi.org/10.1016/S0140-6736(07)61238-0

Rodríguez-Barragán, M., Fernádez-San-Martín, M. I., Clavería-Fontán, A., Aldecoa-Landesa, S., Casajuana-Closas, M., Llobera, J., Oliván-Blázquez, B., & Peguero-Rodríguez, E. (2021). Validation and psychometric properties of the Spanish version of the Hopkins Symptom Checklist-25 scale for depression detection in primary care. *International Journal of Environmental Research and Public Health*, *18*(15), 7843. https://doi.org/10.3390/ijerph18157843

RTI International. (2019). First-generation college students: Demographic characteristics and postsecondary enrollment. Washington, DC: NASPA. Retrieved from https://firstgen.naspa.org/files/dmfile/FactSheet-01.pdf

Safe Zone Project. (2022). Safe Zone Project. https://thesafezoneproject.com/

Seeman, T. E., Singer, B. H., Rowe, J. W., Horwitz, R. I., & McEwen, B. S. (1997). Price of

   adaptation--allostatic load and its health consequences. MacArthur studies of successful

   aging. *Archives of Internal Medicine*, *157*(19):2259-68.

Shi, B. (2021). Perceived social support as a moderator of depression and stress in college

   students. *Social Behavior and Personality: An international journal*, *49*(1), e9893.

   https://doi.org/10.2224/sbp.9893

Smout, A., Newton, N. C., Slade, T., O'Donoghue, B., & Chapman, C. (2020). The relationship

   between early risk-taking behavior and mental health problems among a nationally

   representative sample of Australian youth. *Journal of Affective Disorders*, *272*, 239-248.

   https://doi.org/10.1016/j.jad.2020.04.040

Stanton, R., Best, T., Williams, S., Vandelanotte, C., Irwin, C., Heidke, P., Saito, A., Rebar, A.

   L., Dwyer, T., & Khalesi, S. (2021). Associations between health behaviors and mental

   health in Australian nursing students. *Nurse Education in Practice*, *53*, 103084.

   https://doi.org/10.1016/j.nepr.2021.103084

Stebleton, M. J., Soria, K. M., & Huesman, R. L., Jr. (2014). First-generation students' sense of

   belonging, mental health, and used of counseling services at public research universities.

   Journal of College Counseling, 17(1), 6-20. https://doi.org/10.1002/j.2161-

   1882.2014.00044.x

Steers, M-L., N., Chen, T-A., Neisler, J., Obasi, E. M., McNeill, L. H., & Reitzel, L. R. (2019).

   The buffering effect of social support on the relationship between discrimination and

   psychological distress among church-going African-American adults. *Behavior Research

   and Therapy*, *115*, 121-128. https://doi.org/10.1016/j.brat.2018.10.008

Stephens, N. M., Townsend, S. S. M., Markus, H. R., & Philips, L. T. (2012). A cultural mismatch: Independent cultural norms produce greater increases in cortisol and more negative emotional among first-generation students. *Journal of Experimental Social Psychology*, *48*(6), 1389-1393. https://doi.org/10.1016/j.jesp.2012.07.008

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. doi: 10.1080/07448481.2018.1452745

Strategic Enrollment Management and Student Success (2021, Oct. 28). You First at VCU: First-generation student success and research center. https://youfirst.vcu.edu/fgresearchcenter/

Sutin, A. R., & Terracciano, A. (2017). Perceived weight discrimination and high-risk health-related behaviors. *Obesity*, *25*(7), 1183-1186. https://doi-org.proxy.library.vcu.edu/10.1002/oby.21845

Swisher, R. R., & Dennison, C. R. (2020). First- and continuing-generation students, substance use, and college graduation. *Social Forces*, *98*(4), 1636-1668. doi: 10.1093/sf/soz066

Tabachnick, B. G., & Fidell, L. S. (2007). Cleaning up your act: Screening data prior to analysis. *Using multivariate statistics* (4th ed.). (pp. 56-110). Allyn and Bacon.

Taylor, S. E. (2011). Social support: A review. In H. S. Friedman (Ed.), *The Oxford handbook of health psychology* (pp. 189-214). Oxford University Press.

Taylor, T. R., Kamarck, T. W., & Shiffman, S. (2004). Validation of the Detroit area study discrimination scale in a community sample of older African American adults: the Pittsburgh healthy heart project. *International Journal of Behavioral Medicine*, *11*(2), 88–94. doi: 10.1207/s15327558ijbm1102_4.

Thoits, P. A. (2011). Mechanisms linking social ties and support to physical and mental health. *Journal of Health and Social Behavior*, *52*(2),145–161. doi: 10.1177/0022146510395592.

Trivedi, A. N., & Ayanian, J. Z. (2006). Perceived discrimination and use of preventive health services. *Journal of General Internal Medicine*, *21*(6), 553–558. doi:10.1111/j.1525-1497.2006.00413.x.

Unger, J. B. (2018). Perceived discrimination as a risk factor for use of emerging tobacco products: More similarities than differences across demographic groups and attributions for discrimination. *Substance Use & Misuse*, *53*(10), 1638–1644. https://doi-org.proxy.library.vcu.edu/10.1080/10826084.2017.1421226

U.S. Census Bureau. (2016). American Community Survey 2015 (5-year Estimates). Retrieved from http://www.socialexplorer.com/data/ACS2015_5yr/.

U.S. Department of Justice, Federal Bureau of Investigation. (2020). 2020 hate crime statistics. Retrieved from https://www.justice.gov/hatecrimes/hate-crime-statistics

Vargas, S. M., Huey, S. J., Jr., & Miranda, J. (2020). A critical review of current evidence on multiple types of discrimination and mental health. *American Journal of Orthopsychiatry*, *90*(3), 374-390. http://dx.doi.org/10.1037/ort0000441

Vasquez-Salgado, Y., Greenfield, P. M., & Burgos-Cienfuegos, R. (2015). Exploring home-school value conflicts: implications for academic achievement and well-being among Latino first-generation college students. *Journal of Adolescent Research*, *30*(3), 271-305. DOI: 10.1177/0743558414561297

Veijola, J., Jokelainen, J., Läksy, K., Kantojärvi, L., Kokkonen, P., Järvelin, M-R., & Joukamaa, M. (2003). The Hopkins Symptom Checklist-25 in screening DSM-III-R axis-I disorders. *Nordic Journal of Psychiatry*, *57*(2), 119-123. doi: 10.1080/08039480310000941.

Vickers Jr., R.R., Conway, T.L., & Hervig, L.K. (1990). Demonstration of replicable dimensions of health behaviors. *Preventative Medicine, 19*(4), 377-401. doi: 10.1016/0091-7435(90)90037-k.

Wang, X., Cai, L., Qian, J., & Peng, J. (2014). Social support moderates stress effects on depression. *International Journal of Mental Health Systems*, *8*(1), 41. https://doi.org/10.1186/1752-4458-8-41

Wickham, S-R., Amarasekara, N. A., Bartonicek, A., & Conner, T. S. (2020). The big three health behaviors and mental health and well-being among young adults: a cross-sectional investigation of sleep, exercise, and diet. *Frontiers in Psychology*, *11*, 579205. doi: 10.3389/fpsyg.2020.579205

Williams, A. W., Ware, J. E., Jr., & Donald, C. A. (1981). A model of mental health, life events, and social supports applicable to general populations. *Journal of Health and Social Behavior, 22,* 324–336.

Williams, D. R., Lawrence, J. A., Davis, B. A., & Vu, C. (2019). Understanding how discrimination can affect health. *Health Services Research*, *54*(Suppl 2), 1374-1388. doi: 10.1111/1475-6773.13222

Williams, D. R., & Mohammed, S. A. (2009). Discrimination and racial disparities in health: Evidence and needed research. *Journal of Behavioral Medicine*, *32*(1), 20-47. doi: 10.1007/s10865-008-9185-0.

Williams, D. R., Neighbors, H. W., & Jackson, J. S. (2003). Racial/ethnic discrimination and health: Findings from community studies. *American Journal of Public Health*, *93*(2), 200-208. doi: 10.2105/ajph.93.2.200.

Williams, D. R., Yu, Y., Jackson, J. S., & Anderson, N. B. (1997). Racial differences in physical and mental health: Socioeconomic status, stress, and discrimination. *Journal of Health Psychology*, *2*(3), 335-351. doi: 10.1177/135910539700200305.

Willis, D. E. (2021). Feeding inequality: food insecurity, social status, and college student health. *Sociology of Health & Illness*, *43*(1), 220-237. doi: 10.1111/1467-9566.13212

Wills, T. A. (1991). Social support and interpersonal relationships. In M. S. Clark (Ed.), *Prosocial Behavior* (pp. 265-289). Newbury Park, CA: Sage.

Winters, N. C., Myers, K., & Proud, L. (2002). Ten-year review of rating scales. III: Scales assessing suicidality, cognitive styles, and self-esteem. *Journal of the American Academy of Child and Adolescent Psychiatry*, *41*(10), 1150-1181. https://doi.org/10.1097/00004583-200210000-00006

Wolitzky-Taylor, K., LeBeau, R. T., Perez, M., Gong-Guy, E., & Fong, T. (2019). Suicide prevention on college campuses: What works and what are the existing gaps? A systematic review and meta-analysis. *Journal of American College Health*, *68*(4), 419-429. https://doi.org/10.1080/07448481.2019.1577861

Woodford, M.R., Weber, G., Nicolazzo, Z., Hunt, R., Kulick, A., Coleman, T., Coulombe, S., & Renn, K.A. (2018). Depression and attempted suicide among LGBTQ college students: Fostering resilience to the effects of heterosexism and cisgenderism on campus. *Journal of College Student Development, 59*(4), 421-438. doi:10.1353/csd.2018.0040.

Yang, T.-C., Chen, I.-C., Choi, S.-W., 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/10.1016/j.socscimed.2018.06.012

Yoshikawa, H., Wilson, P., A-D., Chae, D. H., & Cheng, J-F. (2004). Do family and friendship

networks protect against the influence of discrimination on mental health and HIV risk

among Asian and Pacific Islander gay men? *AIDS Education and Prevention*, *16*(1), 84-

100. doi: 10.1521/aeap.16.1.84.27719

Zarzycka, D., Ślusarska, B., Dyk, D., Bednarek, A., & Trojanowska, A. (2017). Polish adaptation

of Interpersonal Support Evaluation List, a version for students (ISEL-48v.coll.:

Interpersonal Support Evaluation List, college version). *Health Problems of Civilization*,

11(4), 280-286. https://doi.org/10.5114/hpc.2017.71889

Vita

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