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COPING WITH DISCRIMINATORY STRESS:

OVEREATING AMONG RACIAL/ETHNIC MINORITIES

A THESIS APPROVED FOR THE
DEPARTMENT OF HEALTH AND EXERCISE SCIENCE

BY THE COMMITTEE CONSISTING OF

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Abstract

Introduction: The purpose of the current study was to investigate the relationship between overeating and discriminatory stress among racial/ethnic minorities. The potential association between these two variables would help unlock new contributing factors to the obesity disparity to further direct health promotion interventions. **Methods:** A sample of African American/Black, American Indian, and Hispanic/Latino(a)/Spanish American adults (N = 222) were recruited to participate in an online, survey-based, cross-sectional study. The 64-item survey consisted of the Schedule of Racist Events-Generic, questions from the Eating Disorder Examination Questionnaire, and demographic questions. **Results:** African American/Black participants reported more discriminatory events throughout their lifetime and also appraised those events as more stressful in comparison to both American Indian and Hispanic/Latino(a)/Spanish American participants. Similarly, past year experiences with discrimination were also higher for African American/Black participants compared to Hispanic/Latino(a)/Spanish American participants. However, there were no racial/ethnic differences in reports of overeating. There was a weak, positive correlation between overeating and all three subscales for the Schedule of Racist Events-Generic—incidences of overeating increased as frequency of reported racial discrimination and related stress increased. **Conclusion:** This study illustrates another potential link to the obesity health disparity that may be impairing the health of racial/ethnic minorities. The results can be used to create more effective interventions to alleviate health inequities and improve the health of racial/ethnic minority populations.

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CHAPTER 1: INTRODUCTION

Background

Current obesity rates within the United States are concerning. Based on the 2017 to 2018 cycle of the National Health and Nutrition Examination Survey, over 40% of all U.S. adults are considered obese (Hales et al., 2020). Obesity trends have continued to climb since 1999 (from 30.5% to 42.4%; Hales et al., 2020), and if these trends continue, obesity will affect approximately half of all U.S. adults by 2030 (Finkelstein et al., 2012). Although obesity is a national epidemic, some members of society are affected more than others. In 2017–2018, Hispanic and non-Hispanic black adults had the highest rates of obesity; at 44.8% and 49.6% respectively, both groups experienced higher levels of obesity compared to non-Hispanic whites (42.2%; Hales et al., 2020).

Obesity is not merely excess weight but excess fat that threatens the health status of an individual (World Health Organization [WHO], 2020). The unnecessary accumulation of adipose tissue increases the risk for many health problems, such as insulin resistance, type II diabetes mellitus, cardiovascular disease, hypertension, some cancers, mental disorders (e.g., depression and anxiety), and osteoarthritis (Jastreboff et al., 2018). With such dire consequences, it is crucial that the United States remedy the racial/ethnic health gap of obesity.

Among the leading causes of obesity, dietary intake remains a primary contributor to the epidemic. When caloric intake exceeds what the body uses for energy, the body is left with excess calories that are stored as fat. Caloric expenditure is based on both physical activity level and food ingestion. However, overeating increases the probability of tipping the scale in favor of caloric surplus. The act of overeating has been defined as eating a large portion of food in a short amount of time (Apolzan et al., 2014). Left unhindered, the continual act of overeating without

physically compensating increases the accumulation of body fat, which will eventually lead to obesity (Boutelle et al., 2011). Consequently, overeating is a significant risk factor for obesity.

Amongst other factors, stress has been evidenced as a key contributor to overeating. There is a significant, positive relationship between the two—as stress levels increase, food intake also increases (O'Connor et al., 2008). Research has also illustrated stress' link to obesity. Among individuals who are overweight or are affected by obesity, acute encounters with stress increases ghrelin levels to subsequently drive food intake, regardless of hunger or satiety (Sinha et al., 2019). Consequently, individuals with obesity or excess weight may be susceptible to overeat when faced with stress.

Among racial/ethnic minorities, discrimination and racism are significantly related to stress levels (Kogan et al., 2014; Pascoe & Richman, 2009). Due to society's racial structures, non-white minorities are often treated as inferior to whites; as a result, these individuals experience both intentional and unintentional forms of racism and discrimination (Ford & Airhihenbuwa, 2010b). For many, the regular encounter with racism and discrimination is appraised as a stressor, and consequently, discriminatory or race-related stress is a chronic deterrent to this population. Discriminatory stress has been linked to poor mental health (Kogan et al., 2014) and engagement in risky behaviors (Metzger et al., 2018). Discriminatory stress could also, perhaps, play a role in overeating and the obesity health disparity.

Although research has failed to establish an association between overeating and discriminatory stress, many researchers have investigated a form of overeating (binge eating), and they have found a link between discriminatory stress and binge eating among Latinas (Higgins-Neyland & Bardone-Cone., 2017), Native American women (Clark et al., 2012), and African American women (Harrington et al., 2006). Binge eating is a distinct category of

overeating characterized by consuming an excess quantity of food in a short bout of time coupled with a feeling of loss of control (White & Grilo, 2011). In addition, there is a clinical and psychological component. If binge eating persists without treatment, it can develop into an eating disorder (Stice et al., 2002; White & Grilo, 2011).

Extensive research has examined overeating in relation to stress among white women (Christaki et al., 2013; Manzoni et al., 2009; Vieten et al., 2018; Webber et al., 2018). Likewise, many studies have investigated binge eating in relation to discriminatory stress among racial/ethnic minority women (Clark et al., 2012; Harrington et al. 2006; Higgins-Neyland & Bardone-Cone, 2017). However, there is a substantial lack of research regarding overeating among racial/ethnic minority men and women. Since obesity rates are highest among these populations, it is likely that overeating is also a significant problem among them. Discriminatory stress has been evidenced to impair the health status of these populations; therefore, it may also be linked to the obesity health disparity.

Purpose of Study

The purpose of the current study was to investigate the relationship between discriminatory stress and overeating among racial/ethnic minority men and women. The findings of this study may be used to expand the knowledge of the health field in order to create more effective interventions that target obesity among racial/ethnic minorities.

The primary research goal was to determine whether discriminatory stress is related to overeating among racial/ethnic minorities. According to the Critical Race Theory, discrimination plays a significant role in determining the health status of minority populations (Ford & Airhihenbuwa, 2010a). Several studies have evidenced an association between negative eating behaviors and discriminatory stress (Harrington et al., 2006; Longmire-Avital & McQueen,

2019). Therefore, it was hypothesized that discriminatory stress would be significantly related to overeating among racial/ethnic minorities.

An association between discriminatory stress and binge eating has already been established (Clark et al., 2012; Harrington et al. 2006; Higgins-Neyland & Bardone-Cone, 2017). Many studies have also compared and contrasted differences in binge eating and overeating among adolescents (Goldschmidt et al., 2016) and college females (Mailloux et al., 2014). The current study aimed to examine potential differences in overeating and binge eating among a sample of racial/ethnic minority adults.

Research has also linked Body Mass Index (BMI) to overeating. Those who are considered overweight or obese may be more vulnerable to overeating (Buscemi et al., 2014; Poelman et al., 2013). Normal or healthy weight individuals may be less susceptible to overeating (Sinha et al., 2019). However, to my knowledge, these associations have yet to be made among racial /ethnic minorities. A secondary objective, therefore, was to assess differences in overeating between individuals who are normal weight, overweight, and obese.

Overeating research traditionally focuses on females more than males because females are more at risk for overeating (Kemps et al., 2014). Therefore, another objective for the current study was to investigate potential differences in overeating between males and females. In addition to sex-related differences, the current study aimed to determine potential differences across races and ethnicities in both overeating and discriminatory stress.

Research Questions

- *Is there a relationship between discriminatory stress and overeating among racial/ethnic minorities?*

H1: There will be a relationship between discriminatory stress and overeating among racial/ethnic minorities.

H0: There will be no relationship between discriminatory stress and overeating among racial/ethnic minorities.

- *Is there a difference in discriminatory stress between African Americans/Blacks, American Indians, and Hispanic/Latino(a)/Spanish Americans?*

H1: There will be a significant difference in discriminatory stress between African Americans/Blacks, American Indians, and Hispanic/Latino(a)/Spanish Americans.

H0: There will be no difference in discriminatory stress between African Americans/Blacks, American Indians, Hispanic/Latino(a)/Spanish Americans.

- *Is there a difference in discriminatory stress between males and females?*

H1: There will be a significant difference in discriminatory stress between males and females.

H0: There will be no difference in discriminatory stress between males and females.

- *Is there a difference in discriminatory stress across various levels of education and geographical region?*

H1: There will be a significant difference in discriminatory stress across various levels of education and geographical region.

H0: There will be no difference in discriminatory stress across various levels of education and geographical region.

- *Is there a difference in overeating between African Americans/Blacks, American Indians, and Hispanic/Latino(a)/Spanish Americans?*

H1: There will be a significant difference in overeating between African Americans/Blacks, American Indians, and Hispanic/Latino(a)/Spanish Americans.

H0: There will be no difference in overeating between African Americans/Blacks, American Indians, and Hispanic/Latino(a)/Spanish Americans.

- *Is there a difference in overeating between males and females?*

H1: There will be a significant difference in overeating between males and females.

H0: There will be no difference in overeating between males and females.

- *Is there a difference in overeating between normal weight, overweight, and obese racial/ethnic minorities?*

H1: There will be a significant difference in overeating between normal weight, overweight, and obese participants.

H0: There will be no difference in overeating between normal weight, overweight, and obese participants.

- *Is there a difference in overeating across geographical regions?*

H1: There will be a significant difference in overeating across various geographical regions.

H0: There will be no difference overeating across various geographical regions.

- *Is there a difference in binge eating across racial/ethnic groups, sexes, and weight statuses?*

H1: There will be a significant difference in binge eating across racial/ethnic, groups sexes, and weight statuses.

H0: There will be no difference in binge eating across racial/ethnic groups, sexes, and weight statuses.

Significance

The health and overall quality of life impacts of obesity are severe. Obesity increases the risk for chronic diseases, mental disorders, immobility, and ultimately death (Jastreboff et al., 2019). Since obesity disproportionately affects racial/ethnic minorities in the U.S., these members of society are experiencing more obesity-related health complications and poorer health outcomes than their white counterparts (Mehta et al., 2013). It is therefore critical that further research investigate the obesity disparity in order to identify the root causes of this health gap.

Overeating increases the risk of obesity, and although there are numerous contributing factors, stress levels are directly related to overeating (O'Connor et al., 2008). For ethnic/racial minorities, racism and discrimination are significant sources of stress (Kogan et al., 2014; Pascoe & Richman, 2009). Both factors play a role in determining the health status of these populations and are a major contributor to health disparities (Ford & Airhihenbuwa, 2010b). Consequently, discriminatory and race-related stress may be directly related to overeating among racial/ethnic minorities. By investigating the relationship between these variables, the current study could potentially illustrate racism and discrimination's role in the obesity epidemic. As a result, more effective interventions can be tailored to target these variables and mitigate their contribution to the obesity health disparity. Additionally, if discriminatory stress is associated with increases in overeating, even racial/ethnic minorities who are a normal weight are at risk for becoming overweight or obese from persistently overeating in response to discriminatory stress. Consequently, the current study could also illustrate the need to aid racial/ethnic minorities in healthier ways to cope with discriminatory stress.

Delimitations

The current study limited participation to adults (at least 18 years old) who consider themselves to be a racial or ethnic minority in the United States (African American/Black, Hispanic/Latino(a)/Spanish American, or American Indian). Individuals who are Caucasian, Asian American, or less than 18 were excluded from participation.

Research has linked BMI to overeating. Those who are considered overweight or obese may be more vulnerable to overeating (Buscemi et al., 2014; Poelman et al., 2013;). Although individuals of any weight status may engage in overeating, those who are normal or healthy weight may be less susceptible to overeating (Sinha et al., 2019). Consequently, individuals of all weight categories (e.g., overweight, obese, normal, etc.) were recruited.

Limitations

Due to the nature of cross-sectional and nonexperimental studies, no causal relationships can be established—only relationships and associations. A major strength to the study was its unique online format that enabled the survey to be sent to regions throughout the country. However, it was limited in its lack of randomization because it was not possible to randomly select a sample from all racial/ethnic minority adults in the U.S. Additionally, data was collected with self-report measures, and this method may not be as accurate as objective means of measuring.

Assumptions

Since all data was collected via self-reported surveys, it was assumed that participants would answer truthfully and honestly without bias. It was also assumed that scales and survey measures were valid and reliable measures of discriminatory stress and overeating among the current sample of racial/ethnic minority adults.

Operational Definitions

- Binge Eating: This is a sub-category of overeating characterized by the consumption of a large amount of food within a short time period coupled with a feeling of loss of control (White & Grilo, 2011).
- Body Mass Index (BMI): BMI is an individual's weight in kilograms divided by their height in meters squared (kg/m^2; Centers for Disease Control [CDC], 2017). This standardizes weight by taking height into account so that relative comparisons can be made.
- Discriminatory Stress: Discriminatory stress is any psychological distress that occurs as a result of discrimination (i.e., being treated unfairly or differently for not being a member of a majority group [Higgins-Neyland & Bardone-Cone, 2016]). In the current study, the discrimination being assessed was unfair treatment or exclusion because of racial or ethnic classification.
- Ethnic Minorities: Ethnic minorities refers to groups of people who have common, cultural characteristics (e.g., beliefs, language, or ancestry) that have significantly less social power than the majority ethnicity (American Psychological Association [APA], 2020). For the purposes of the present study, this included Hispanic/Latino(a)/Spanish Americans.
- Normal Weight: An individual whose BMI is at least 18.5 but less than 25 is considered normal or healthy weight (CDC, 2017).
- Overeating: Overeating is the act of consuming a large amount of food in a short bout of time (Mailloux et al., 2014).

- Overweight: An individual whose BMI is at least 25 but less than 30 is considered overweight (CDC, 2017).
- Obese: An individual whose BMI exceeds 30 is considered obese (CDC, 2017).
- Racial Minorities: These are groups of people who share common physical characteristics (e.g., skin color) that are different than the majority race (white; APA, 2020). The current study included African Americans/Blacks and American Indians.

CHAPTER 2: REVIEW OF LITERATURE

Obesity rates continue to escalate in the United States; however, the rates are disproportionately highest among racial/ethnic minorities (Hales et al., 2020; Subica, et al., 2017). Excess adipose tissue increases the risk for multiple chronic diseases, strains mental health, and limits overall quality of life (Jastreboff et al., 2018). Consequently, racial.ethnic minorities are experiencing poorer health outcomes and increased morbidity as compared to the white majority (Mehta et al., 2013).

Dietary factors can negatively impact weight status. Over time, the ingestion of excessive calories will inevitably lead to obesity (Boutelle et al., 2011), and overeating can facilitate this weight gain. Since racial.ethnic minorities are inordinately affected by obesity, it is likely that these groups also experience high rates of behavioral risk factors, such as overeating.

Racial divide and social inequalities are the core foundation for many health disparities (Simons et al., 2018). Obesity may not be an exception. Due to chronic encounters of discrimination, racial/ethnic minorities report this prejudiced treatment as a significant source of stress (American Psychological Association [APA], 2019; Driscoll et al., 2015; Pascoe & Richman, 2009). Consequently, there may be a potential link between discriminatory stress and overeating that is contributing to the obesity health disparity among racial/ethnic minority adults. The purpose of the current study, therefore, was to investigate the relationship between discriminatory stress and overeating among racial/ethnic minority men and women in order to identify a potential source of the obesity health disparity.

Overeating and Binge Eating

Dietary factors can influence and alter weight status. Although caloric quality can contribute to obesity (Dallacker et al., 2019), caloric quantity directly impacts weight status. When the calories ingested from food exceed the calories expended from daily activity levels, the body is left with excess calories that are stored as fat, and overtime, the collection of adipose tissue leads to weight gain that predisposes an individual to obesity (Boutelle et al., 2011).

Overeating does not definitively lead to weight gain; however, it increases the risk of surpassing caloric expenditure. Overeating consists of eating a large amount of food in a short period of time (i.e., within a two-hour time period; Mailloux et al., 2014; Yanovski et al., 2015). However, everyone overeats on occasion. Certain holidays (e.g., Thanksgivings) or celebrations (e.g., weddings) normalize overeating, and these occasional caloric splurges will not jeopardize an individual's weight status. The continual act of eating excessive amounts of food without physical compensation (e.g., exercise), though, will eventually lead to obesity (Kumanyika et al., 2012).

In an experimental, crossover study comparing the short-term effects of three overeating dietary regimes (high fat/low energy density, high fat/high energy density, and high carbohydrate/low energy density), a sample of 20 participants were required to eat 12% more calories than their regular caloric intake. Overeating across all dietary treatments resulted in short-term weight gain. If overeating was prolonged, therefore, weight would continue to escalate. Additionally, all groups continued to overeat on the first day following the intervention, and the high fat/high energy density and high carbohydrate/low energy density groups continued to overeat on all four days of post-treatment analysis. Not only does acute overeating increase weight gain, but it also increases the risk of habitually overeating (Apolzan et al., 2014).

In addition to its precipitation of obesity, overeating is also characteristic of individuals who are obese. Among a sample of 314 adults, Body Mass Index (BMI) was significantly predictive of overeating—as BMI increased, overeating subsequently increased. Participants affected by obesity reported overeating an average of seven times in the past 28 days as compared to an average of two times among participants without obesity (Görlach et al., 2016). Individuals who are overweight or obese are at more risk for overeating as compared to individuals who are a healthy weight. Consequently, overeating may be a key barrier for weight loss interventions.

Within the overarching category of overeating, there various forms and types, including binge eating (Mailloux et al., 2014). Binge eating is a distinct sub-category of overeating characterized by consuming an excess quantity of food in a short bout of time coupled with a feeling of loss of control (White & Grilo, 2011). In both cross-sectional and longitudinal studies, binge eating was distinguished by negative psychological factors (e.g., distress or low self-esteem) and poor body satisfaction among adolescents and young adults (Goldschmidt et al., 2016; Mailloux et al., 2014). Although distinct, they also share commonalities. Hunger and disinhibition were predictive of both overeating and binge eating among college females (n = 1,447; Mailloux et al., 2014), and among a small but significant subgroup of adolescents, overeating at baseline or five-year analysis developed into binge eating at five-year or ten-year follow-up (Goldschmidt et al., 2016). Overeating and binge eating are interrelated, but binge eating is precipitated by negative psychological factors (e.g., depression, distress, low self-esteem, or poor body image). However, left untreated, overeating can escalate into binge eating.

Eating Behaviors among Racial/Ethnic Minorities

While the prevalence of overeating among racial/ethnic minorities remains unclear, these groups continue to have the highest rates of obesity (Hales et al., 2020). In a large sample of college students, African Americans/Blacks, Hispanic Americans, and American Indians were significantly more likely to be overweight than Caucasians, and there was a significantly higher risk for obesity among African Americans/Blacks and Hispanics as compared to Caucasians (Reslan & Saules, 2013). Since overeating is a direct cause of obesity (Kumanyika et al., 2012) and more prevalent among those affected by obesity (Görlach et al., 2016), it is reasonable to assume that overeating is a significant health problem among these populations.

In a study comparing binge eating habits of Caucasian women to African American women, white participants had significant increases in the degree of binge eating when trauma was used as a moderator. Black participants, though, were unaffected by the moderator; their degree of binging remained high. Rather than eating disorder cycles of binging and restricting, African American participants exhibited habitual overeating, and the researchers concluded that their binge eating scores may be more indicative of lifestyle choices rather than cyclic eating problems (Harrington et al., 2006).

Culture may also drive overeating and obesity among racial/ethnic minorities. In a collegiate sample of Caucasian, Asian American, and African American men, African American participants had significantly higher BMIs as compared to other participants; however, they had the lowest body image concerns of any group of participants (Kelly et al., 2015). African Americans/Blacks may have different body size ideals than other racial groups, leading some to believe they may be more satisfied with being at higher BMIs; overeating would enable them to maintain this physique. Other nonwhite racial groups are also less likely to acknowledge obesity

as a health problem (Goode et al., 2016). These groups tend to be less educated than their white peers (Goode et al., 2016). Consequently, they may not understand the health risks of overeating.

Socioeconomic factors may contribute to overeating among racial/ethnic minorities. These populations have both historical and current trends of lower socioeconomic statuses (Kumanyika et al., 2012). As previously mentioned, Reslan and Saules (2013) assessed factors associated with obesity and binge eating among a large sample of ethnically diverse college students. There was a significant association between obesity and financial insecurity; obesity was highest among African American, Hispanic, Asian American, and Caucasian participants who struggled financially (Reslan & Saules, 2013). When money is in short supply, food is consumed that is inexpensive and easily accessible. Bulk products make packaged, unhealthy foods convenient and cheap; people can pay less for calorically dense, low-nutrient foods (Kumanyika et al., 2012; Poelman et al., 2013). The more food that is present, the more food will be consumed, and since these bulk foods are lacking in nutrients, they fail to satisfy satiety and make it easier to consume mass amounts (Poelman et al., 2013). Historical traditions have also encouraged overeating when money or food was scarce (Kumanyika et al., 2012). Consequently, for low socioeconomic populations, overeating is made easy and practical with environmental influences.

Factor et al. (2011) proposed a more radical theory regarding racial/ethnic minorities' engagement in overeating. According to their theoretical framework, non-dominant groups consciously or unconsciously engage in daily, resistant behaviors (in the form of unhealthy behaviors) to challenge the hierarchical structure of society. Many healthy behaviors (e.g., portion control) may be perceived by racial/ethnic minorities as adhering to the dominant race's standards. Since non-dominant races may feel alienated from society due to prejudice and

discrimination, they may defy these standards by actively choosing not to participate in healthy behaviors in order to preserve their own racial and cultural identity (Factor et al., 2011). Hence, overeating may be an intentional or unintentional act of cultural preservation and societal defiance.

There are many factors that may lead to overeating among racial/ethnic minorities. Cultural, environmental, and socioeconomic all play a role in promoting this unhealthy behavior among these populations.

Stress and Overeating

Although many would argue that overeating is a controllable behavior, there are physiological mechanisms that increase the risk of consuming excess food. Stress is one such mechanism that can drive overeating. When the body feels distressed, the brain responds by secreting cortisol (Kistenmacher et al., 2018). In a study conducted by Kristenmacher et al. (2018), researchers compared levels of cortisol secretion and energy levels of the central nervous system among fourteen healthy, male participants. Participants were randomly assigned to a stress group with an acute, psychological, stress stimulation or a control group. After the stress stimulation, there were significantly higher levels of cortisol secretion among participants in the stress group as compared to the control group, and central nervous system activity demonstrated an increased demand for energy (Kistenmacher et al., 2018). Similarly, participants with excess weight or affected by obesity in Sinha et al.'s study (2019) had increased levels of ghrelin after being exposed to a stressful, audio scenario. In both studies, participants induced with stressful simulations consumed significantly more food than control groups (Kistenmacher et al., 2018; Sinha et al., 2019). When the brain senses distress, its energy demand increases (Kistenmacher et

al., 2018). As a result, cortisol is secreted to induce food ingestion, but these responses may be more severe in individuals with excess weight or affected by obesity.

In Sinha et al.'s study (2019), only participants with weight above the normal range or suffering from obesity exhibited increases in ghrelin and food cravings in response to stress; however, these responses were not seen among lean participants. This suggests that individuals with obesity or excess weight may be more susceptible to overeating in response to stress. The continual process of overeating can also lead to reduced inhibitory control—a lack of mental ability to resist cravings (Mason et al., 2018; Stice et al., 2017). Individuals affected by obesity or with excess weight may be caught up in an endless cycle of stress and overeating that further contributes to excess weight and poor health outcomes.

From a psychological standpoint, overeating may also be used as a coping mechanism. In a national survey conducted by the American Psychological Association (APA; 2012), 39% of Americans reported overeating or eating unhealthy foods in response to stress. When exposed to stress, many turn to food, consuming excess calories to temporarily distract from foreboding distress (Christaki et al., 2013; O'Connor et al., 2008). When investigating the relationship between emotion regulation and overeating, expressive suppression (suppression of stress) and BMI were interactively predictive of overeating—participants with high BMIs who also reported higher levels of expressive suppression were at an intensified risk for overeating (Görlach et al., 2016). Rather than expressing their emotions and stress, overeating may be used as a maladaptive means to cope, especially among individuals struggling with obesity or excess weight.

O'Connor et al. (2008) sought to further investigate this association through the use of food intake diaries. Rather than lab-induced stress, participants *(n* = 422) recorded their daily

intake along with hassles (stressors) they experienced throughout the day. The 28-day logs revealed a significant relationship between stressors and between-meal snacks. Snack consumption, particularly food high in fat and sugar, increased when participants reported one or more daily hassles. This association was strengthened among participants who were female or obese (O'Connor et al., 2008). The results were mirrored in a survey-based study conducted by Sims et al. (2008). There was a significant relationship between perceived stress and emotional eating. When hit with stress, participants were more likely to turn to food as a means to cope, especially calorically dense and easily accessible food. Once again, this association was stronger among participants with obesity or excess weight (Sims et al., 2008). Participants exceeding a normal weight range or suffering from obesity may be more likely to overeat due to stress.

Discriminatory Stress among Racial/Ethnic Minorities

Since stress appears to be a significant risk factor for obesity, it is important to determine the salient sources of stress. In 2019, next to gun violence and political uncertainty, discrimination was reported as a major source of stress in modern America. One in four U.S. adults reported discrimination as a significant stressor, and more specifically, nearly two in three (64%) racial minority adults reported discrimination to be a barrier to their overall quality of life (APA, 2019). Racial/ethnic minorities chronically experience unfair treatment due to their culture or skin tone (Ford & Airhihenbuwa, 2010a; Simons et al., 2018).

Discrimination is any act or unequitable treatment that degrades an individual or group based on physical race or ethnic affiliation (Clark et al., 1999). Among African Americans/Blacks, Hispanic/Latino(a)/Spanish Americans, and American Indians, discrimination has been substantiated to be a significant source of stress (Belcourt-Dittloff &

Stewart, 2000; Clark et al., 1999; Higgins-Neyland & Bardone-Cone, 2017; Utsey et al., 2002). However, each group has its own distinct, discriminatory experiences.

American Indians' cultural discrimination stems from a history of forced assimilation, loss of tribal lands, and mass genocide. This historical loss continues to be a psychological strain among Native Americans (Clark & Winterowd, 2012). Skewes et al. (2019) investigated both contemporary and past prejudice's effect on a sample of rural American Indians *(n* = 25; *M* = 52). Drug and alcohol problems plagued the tribal community, and participants linked these negative behaviors to colonialism and racism. Along with American Indians across the country, the Montana tribe was forced onto a reservation and pressured to assimilate, and in the process, a structural system of inequality was catalyzed and embedded, resulting in poorer socioeconomic and health statuses. Native Americans deal with daily and historical discrimination that leads many to turn to drugs and alcohol as a means to cope with the stress (Skewes et al., 2019).

Despite the legal gains in equality through emancipation and the Civil Rights Era, racism and prejudice still pervasively impacts African Americans/Blacks. African Americans/Blacks have been the central, target population of racism research, and research has proven discriminatory stress' unfavorable health associations among Black adolescents (Simons et al., 2018), young adults (Pittman et al., 2019), and elderly (Lee et al., 2017). The health outcomes range from maladaptive coping strategies (Pittman et al., 2019) to decreased leukocyte telomere length (Lee et al., 2017). However, African Americans/Blacks may have a unique protective strategy. Although African Americans/Blacks reported the highest levels of individual, cultural, and institutional race-related stress compared to Latino and Asian Americans, they had the highest levels of psychological well-being and overall quality of life (Utsey et al., 2002). Cultural bonds and identity is associated with increases in quality of life, and compared to other

races, African Americans/Blacks have higher levels of ethnic identity affirmation (Driscoll et al., 2015; Utsey et al., 2002). They may combat extensive discrimination with cultural ties and group unity. Ultimately, though, this race has a lower life expectancy and higher rates of chronic diseases than the white majority and other racial/ethnic minority groups (Lee et al., 2017).

In addition to white inferiority, Latino and Hispanic Americans may be regularly questioned about their immigration and legal status (Huynh et al., 2012). Like American Indians, they may also feel pressured to adopt white, American culture and renounce their own (Higgins-Neyland & Bardone-Cone, 2017). However, blatant or covert discrimination may not always be appraised as stressful. A sample of 168 Latino American adults reported a low amount of stress from discrimination; however, both perceived stressfulness and frequency of discrimination were predictive of psychological stress. When frequency was increased, symptoms of depression and anxiety were subsequently increased, no matter the level of perceived stress. Despite discriminatory acts failing to be appraised as stress, these events still had negative psychological impacts on participants (Huynh et al., 2012). Even when prejudiced treatment may not feel as distressing, discriminatory stress can still subconsciously affect this minority and hinder their health as a result.

Discriminatory Stress and Health

In spite of their distinctions and unique experiences, American Indians, African Americans/Blacks, Hispanic Americans, and Latino Americans all report discrimination to be a significant source of stress, and their health is consequentially diminished (Higgins-Neyland & Bardone-Cone, 2017; Jones & Galliher, 2015; Utsey et al., 2002). Increased exposure to discriminatory stress without proper coping strategies may result in biological changes (e.g., increased sympathetic nervous system activation or high resting blood pressure) that lead to

long-lasting health problems (Clark et al., 1999). With poorer health outcomes and growing health disparities, researchers point to discriminatory stress as the key contributing factor (Belcourt-Dittloff & Stewart, 2000; Simons et al., 2018).

The impact of discriminatory stress was illustrated in a sample of African American adults (n = 247; Driscoll et al., 2015). Study results indicated a significant, negative relationship between individual, institutional, and cultural race-related stress and life satisfaction. Whether participants experienced discrimination interpersonally, occupationally, or due to their heritage, all dimensions were associated with significant decreases in life satisfaction (Driscoll et al., 2015). Race-related stress was also a significant predictor of mental health among another sample of African American adults *(*n = 255; Franklin-Jackson & Carter, 2007). Discriminatory stress can have deleterious impacts on racial/ethnic minorities' mental health, and in the process, their overall quality of life may suffer.

Discriminatory stress can also affect health status. Race-related stress produces biological changes that increase the risk for chronic diseases and other health complications (Brody et al., 2018; Simons et al., 2018). Simons et al. (2018) posited that discriminatory stress' impact on health is greater than any behavioral factor, regardless of socioeconomic status. To test this theory, the researchers conducted a longitudinal study with fifth grade-aged African Americans/Blacks *(*n = 889) until participants reached about 28 years of age (n = 479). Using chronic inflammation as a marker of biological deterioration, both racial segregation and discrimination were significantly related to inflammation at every age that participants were assessed. Neither education nor income were related to inflammation, and most negative health behaviors (with the exception of exercise) were not related to inflammation. Though not inclusive of all health complications, inflammation can be indicative of an adverse immune

response, that if left uncontrolled, can increase the risk for chronic diseases (e.g., type-II diabetes and cardiovascular disease; Simons et al., 2018). As racial/ethnic minorities experience high levels of stress from discrimination and racism throughout their lifetime, inflammation levels may also increase, putting them more at risk for future health problems. Since neither socioeconomic status nor health behaviors were significantly associated with inflammation levels (Simons et al., 2018), discriminatory stress may be the critical link in the chain of racial/ethnic health disparities.

Discriminatory stress has also been associated with engagement in risk behaviors. Pittman et al. (2019) investigated the relationships of race-related stress and acculturative stress with drinking behaviors among a sample of African American college students (n = 649). Both measures of minority stress were significantly associated with risky alcohol use and coping-motivated drinking, and the stressors were also significant predictors of risky alcohol use (Pittman et al., 2019). As levels of discriminatory stress increased, risky alcohol use and drinking as an unhealthy means to cope also increased.

In addition, racism has also been associated with weight gain; as the amount of racist encounters increases, weight tends to increase along with it (Brody et al., 2018; Cozier et al., 2009). If discriminatory stress can lead to health complications (Simons et al., 2018) and increase the risk for obesity (Brody et al., 2018; Cozier et al., 2009), racial/ethnic minorities may be experiencing a distinct health disadvantage, further exacerbating health disparities. Since discriminatory stress has been linked to engagement in risky behaviors such as alcohol abuse (Pittman et al., 2019), it may also play a role in risky eating behaviors.

Discriminatory Stress and Eating Behaviors

Although research has been unclear about the relationship between discriminatory stress and overeating, research has evidenced its impact on binge eating. High levels of discriminatory stress have been associated with increases in binge eating among African American (Harrington et al., 2006), Latina American (Higgins-Neyland & Bardone-Cone, 2017), and American Indian (Clark & Winterowd, 2012) women. According to Escape Theory, individuals use binge eating as a means to escape from the high pressures of reality (Higgins-Neyland & Bardone-Cone, 2017). Although binging may provide temporarily relief from stress, consistent and excessive binge eating can lead to excessive weight and health problems (Higgins-Neyland & Bardone-Cone, 2017).

Among a sample of Latinas with a history of binge eating disorder (n = 119), discriminatory stress was both indirectly and directly predictive of binge eating (Higgins-Neyland & Bardone-Cone, 2017). Increases in discriminatory stress would likely be followed by increases in binge episodes among participants. This trend was also evident among a sample of American Indian women (n = 203). Along with emotional distress, race-related stress and lifetime racist experiences were the most significant predictors of binge eating among participants (Clark & Winterowd, 2012). For both populations, discriminatory stress was associated with increases in binge eating. Given the psychological and physical health consequences, addressing minority stress may be key to treating binge eating among Latinas, American Indians, and potentially other racial/ethnic minority females.

Discriminatory stress was also predictive of another harmful eating behavior among African American women. Researchers used a cross-sectional study to investigate the relationship between discriminatory stress and emotional among emerging adult, black females

(n = 149). Race-related stress was significantly related to and a significant predictor of emotional eating (Longmire-Avital & McQueen, 2019). As participants reported higher levels of stress due to racism, they reported more reliance on food as a coping mechanism.

In a weight loss study, race was significantly associated with weight change–African American women (n = 84) lost significantly less weight than white women (n = 133). African American participants also reported significantly higher levels of perceived stress as compared to Caucasian participants, and as stress increased, weight tended to increase (Kim et al., 2009). Although discriminatory stress was not specifically measured, the results suggest that stress and race were significant inhibitors to weight loss among participants. As discriminatory stress has been associated with increased weight gain among racial minorities (Brody et al., 2018; Cozier et al., 2009), it may also have been a significant barrier for participants in this study as well.

Racial/ethnic minorities chronically experience racism and discrimination that leads to increased stress and psychological strain (Clark & Winterowd, 2012; Kaduvettoor-Davidson & Inman, 2013; Simons et al., 2018). Research has proven that when stress increases, the body responds by secreting cortisol, stimulating food ingestion (Kistenmacher et al., 2018; Sinha et al., 2019). The physiological stimulation of hunger coupled with the psychological additive of temporarily stress-relief (Christaki et al., 2013; Laraia et al., 2018) makes overeating appealing during times of stress. If this is true for general stress, it could perhaps be true for discriminatory stress as well. Overeating may be a physiological and psychological response to discriminatory stress among racial/ethnic minorities that in turn contributes to disproportionate rates of obesity among these populations.

Summary

Although there are many mechanisms that contribute to overeating, stress may be a key player in driving excess caloric intake. Stress both physically (through cortisol secretion) (Kistenmacher et al., 2018; Sinha et al., 2019) and mentally (through emotional discomfort) (Laraia et al., 2018; O'Connor et al., 2008) promotes food ingestion as a solution to dealing with distressing circumstances. Despite disproportional obesity rates, however, there is a sufficient lack of research regarding overeating among racial/ethnic minorities.

As health disparities continue to increase and widen the gap between whites and non-whites, it is crucial that researchers act to determine the root of health inequity. Many believe that racism and discrimination may lie at the root of health disparities. Racial/ethnic minorities are chronically exposed to racism and prejudice, and these populations have reported discrimination to be a significant stressor that has been associated with physical (e.g., chronic inflammation and weight gain; Brody et al., 2018; Simons et al., 2018) and psychological (e.g., reduced quality of life and poor coping mechanisms; Driscoll et al., 2015; Pittman et al., 2019) consequences.

Few researchers have investigated the relationship between discriminatory stress and overeating. Since stress has been evidenced to promote overeating, and racism and prejudice are major sources of stress for racial/ethnic minorities, discriminatory stress could also be related to overeating among these populations and may be a potential explanation for racial/ethnic obesity disparities. The aim of the current study, therefore, was to fill these gaps in research by exploring the relationship between overeating and discriminatory stress among a sample of racial/ethnic minority adults.

CHAPTER 3: METHODOLOGY

The purpose of the current study was to investigate the association between discriminatory stress and overeating among racial/ethnic minority adults. It was hypothesized that there would be a significant relationship between the two variables. By establishing a potential association between overeating and discriminatory stress, the current study may unlock a new link to the obesity health disparity. The following sections will outline the sampling strategies and how the study was conducted in order to effectively test the research hypotheses.

Participant Characteristics

Participants had to be at least 18 years or older and self-identify as a racial or ethnic minority (i.e., African American, American Indian, or Hispanic American, Latino(a), or Spanish American) who currently resided in the United States. Both males and females were included in this study. Obesity has been strongly linked to overeating; those who have excess weight or obesity are more vulnerable to overeating as compared to normal weight individuals (Buscemi et al., 2014; Poelman et al., 2013; Sinha et al., 2019). However, both normal weight individuals and those who are overweight and obese were recruited in order to assess overeating in relation to perceived discrimination across various weight categories.

Sampling Procedures

In an effort to recruit a robust sample of racial/ethnic minority adults, a combination of convenience and snowball sampling strategies were used. Previous studies have provided effective recruitment strategies to reach this target population. In a study investigating emotional eating among African American college women, Longmire-Avital and McQueen (2019) utilized both university and social groups. They advertised their study on social media pages and groups that were specifically made for African American college students (Longmire-Avital &

McQueen, 2019). Similarly, Sims et al. (2008) publicized their study at local community events, churches, and health fairs to recruit a sample of racial minority adults. Study advertisements in a large job site also proved to be an effective way to draw a large sample of adults (n = 422) (O'Connor et al., 2008).

For the current study, both collegiate and occupational groups were targeted for recruitment. University clubs and state organizations intended for racial/ethnic minority groups were contacted to discuss the purpose of the study and request participation. Recruitment advertisements were also posted on social media, with a focus on reaching pages created for racial/ethnic minorities. Social media posts encouraged viewers to share the study information with their social connections in an effort to expand the study's reach. Flyers were also posted among local businesses within the Norman area and placed inside collection bags at food pantries. Additionally, local and metropolitan business, American Indian reservations in Oklahoma and Texas, churches (in the Norman, OKC, and Dallas area), and afterschool programs were contacted to request participation of employees, tribal members, church members, and parents respectively.

All emails and electronic and print advertisements gave a brief overview of the study and its importance. A link enabled potential participants to voluntarily access the online survey.

Research Design

A cross-sectional, survey-based study using quantitative measures was used to test the research hypotheses. The survey was online and created via Qualtrics. It consisted of approximately 64 questions and took about 15 to 20 minutes to complete, and it included the Schedule of Racist Events-Generic (Lang, 2001), portions from the Eating Disorder Examination Questionnaire (Fairburn & Beglin, 1994), and demographic questions. These scales were used to

assess the sample's encounters with discriminatory events, level of stress related to those events, frequency of overeating and binge eating, and demographic information. Before beginning the survey, participants were informed of their ability to withdraw from the study at any time and assure protection of confidentiality and anonymity. Before initiating data collection, IRB approval was obtained (Appendix A). Data collection took place from approximately June 2020 through March 2021.

Measures

Perceived discrimination. The Schedule of Racist Events (SRE) is a valuable scale for assessing discriminatory stress and perceived discrimination. The SRE was originally created to assess discrimination among African Americans/Blacks (Landrine & Klonoff, 1996). This 18-item self-report measure assesses both recent (in the past year) and lifetime encounters with racist events and participants' appraisal of these events as stressful. For all three subscales, there was high internal consistency reliability coefficients (Cronbach's $\alpha \geq .94$), and it was significantly correlated with a criterion measure (Landrine & Klonoff, 1996). It was deemed reliable and valid for assessing discriminatory stress in a longitudinal sample of African American adolescents (Simons et al., 2018) and for Caucasian and African American women (Harrington et al., 2006).

However, the current study investigated discriminatory stress among American Indians and Hispanic/Latino(a)/Spanish Americans in addition to African Americans/Blacks. The Schedule of Racist Events-Generic (SRE-G) was therefore used instead. It mirrors the Schedule of Racist Events with 18-items that assess recent and lifetime racist events, as well as participants' appraisal of these events as stressful; however, the words "race or ethnic group" are used in place of the word "Black" (Lang, 2001). For example, a question was re-written to read,

"How many times have you been treated unfairly by your employers, bosses, and supervisors because of your race or ethnic group?" instead of "How many times have you been treated unfairly by your employers, bosses, and supervisors because you are Black?" For both lifetime and recent racist events, participants rate the frequency on a 6-point Likert scale from 1 (never) to 6 (almost all of the time). After each scenario, participants rate how stressful the event was from 1 (not at all) to 6 (extremely). A summed score is calculated for each subscale (lifetime racist events, recent racist events, and appraisal of racist events) in which higher scores indicate more encounters with discrimination or higher perceived stress related to those events (i.e., discriminatory stress; Lang, 2001). For the current study, a score for each individual subscale (recent, lifetime, and appraisal) was calculated for each participant.

For the entire sample of African Americans/Blacks, Hispanic Americans, Asian Americans, Native Americans, and Anglo Americans, the SRE-G exhibited high reliability (≥ .90) across all three subscales. There was also high reliability for each of the current study's target races and ethnicities (African Americans/Blacks ≥ .89, Hispanic Americans ≥ .93, and Native Americans ≥ .95). In addition, it was also evidenced to be valid when compared against a criterion measure (Lang, 2001).

Overeating and binge eating. The original Eating Disorder Examination was an in-person interview conducted to assess an individual's level of eating restraint, eating concern, shape concern, and weight concern that are reflective of eating disorder tendencies. However, the interview has been converted into a written questionnaire (Eating Disorder Examination Questionnaire [EDE-Q]) and has been evidenced as a comparable measure of eating disorder screening (Fairburn & Beglin, 1994).

Previous studies investigating overeating and/or binge eating have used portions of the questionnaire to estimate participants' frequency of overeating and binge eating (Görlach et al., 2016; Mailloux et al., 2014). To assess overeating, the EDE-Q question, "Over the past 28 days, how many times have you eaten what other people would regard as an unusually large amount of food (given the circumstances)?" was used, and researchers used the EDE-Q question, "On how many of these times did you have a sense of having lost control over your eating (at the time that you were eating)?" to assess binge eating (Görlach et al., 2016; Mailloux et al., 2014). Similarly, a longitudinal study examining overeating and binge eating used questions from the Questionnaire on Eating and Weight Patterns-Revised to assess both these eating behaviors. Both questions were comparable to the EDE-Q ("In the past year, have you ever eaten so much food in a short period of time that you would be embarrassed if others saw you, and during the times when you ate this way, did you feel you couldn't stop eating or control what or how much you were eating?") and demonstrated high reliability (Goldschmidt et al., 2016).

Since the EDE-Q is both a valid and reliable assessment tool and has been replicated for use in other studies, the current study used two questions from the questionnaire to estimate participants' frequency of overeating and binge eating. Participants self-reported how often they overate or binged over the past 28 days, and numbers ranged from 0 to 28 days. A number of participants inaccurately reported binge eating scores by reporting days of feeling out of control with overeating beyond the number of days they overate or no days of overeating. Consequently, participants were put into two categories—those who binged (reported at least one day of feeling out of control in addition to overeating at least one day) and those who did not binge (reported no days of binge eating or failed to report any days of overeating). Conversely, overeating was

simply the number of days participants reported eating a large portion of food in a short amount of time.

Demographic questions. Demographic questions were placed at the beginning of the survey to verify that participants fulfilled the inclusion criteria. To ensure the inclusion of only racial/ethnic minorities, participants were asked to choose which race/ethnicity they considered themselves to be, and only those who chose American Indian, African American, Hispanic/Latino(a)/Spanish American were included. Participants were also asked to report their age, and anyone less than 18 years old was excluded.

Other demographic data collected includes self-reported weight and height to categorize participants as underweight, normal weight, overweight, or obese; income; the number of people living in their household; marital status; geographic region of residence; and sex. This information was collected so corresponding comparisons of discriminatory stress, overeating, and binge eating could be made. Specific questions utilized and response options are included in Appendix B.

Data Analysis

Given that normally distributed data is an underlying assumption of some parametric statistical analyses, this assumption was assessed both graphically and numerically. Visual inspection of histograms for overeating and all three SRE-G subscales (recent and lifetime discriminatory events and the appraised stressfulness of those events) suggested the data were not normally distributed. As confirmed by the Kolmogorov-Smirnov tests, the data for overeating ($p < .001$), lifetime experiences with discrimination ($p = .005$) and past year encounters with discrimination ($p < .001$), as well as the perceived stressfulness of these

experiences (p = .029) were not normally distributed. Consequently, nonparametric tests were used to analyze the variables.

A Kendall's Tau correlation was calculated to assess the relationship between overeating and recent and lifetime encounters of discriminatory events, as well as the appraised stressfulness of those events.

To compare differences in recent and lifetime discriminatory stress, and the appraisal of those events across ethnic/racial groups, a series of Kruskal-Wallis tests were run. If these tests were significant, a Mann-Whitney U test was performed to determine which ethnic/racial groups differed for each dependent variable, and to reduce the risk of type I errors, the Bonferroni adjustment was used for the post hoc pairwise comparisons ($p < .017$). This process was repeated for comparing previous year experiences with discrimination, discrimination over one's entire lifetime, and the perceived stressfulness of these occasions across geographic regions and education levels. A Mann-Whitney U test was also used to compare differences in recent encounters of discrimination, lifetime experiences of discrimination, and the appraised stressfulness of these events between males and females.

A Kruskal-Wallis test was also used to compare differences in overeating across African American/Black, Hispanic/Latino(a)/Spanish, and American Indian participants. If the test was significant, a Mann-Whitney U test was used to determine which racial/ethnic groups differed. Similarly, Kruskal-Wallis tests were run to compare differences in overeating across various weight statuses (normal weight, overweight, or obese) and geographical regions (Midwest, South, West, and Northeast). If tests were significant, a Mann-Whitney U test was then used to determine which weight statuses or locations were different using the Bonferroni adjustment ($p <$ .017 and < .013 respectively). Additionally, a Mann-Whitney U test was used to compare

differences in overeating between males and females. Chi-squared tests were run to compare proportions of binge eating across weight statuses, racial/ethnic groups, and the sexes.

Analyses was performed with SPSS 24. Level of significance was set at 5% ($p < 0.05$).

CHAPTER IV: RESULTS

Although numerous studies have established a relationship between stress and overeating among White females, this topic has been sparsely researched among racial/ethnic minorities (Christaki et al., 2013; Manzoni et al., 2009; Vieten et al., 2018; Webber et al., 2018). Discriminatory stress has been evidenced to physiologically impact health among this population in a number of ways, and its potential influence on health behaviors, such as overeating, could exacerbate racial/ethnic health disparities. The current study sought to enhance the literature by investigating the relationship between overeating and discriminatory stress among racial/ethnic minority adults. In addition, differences in overeating, binge eating, and discriminatory stress across various weight statuses, races/ethnicities, geographical locations, and sexes were assessed. The following section will present the results to the statistical analyses used to test the research hypotheses.

Participants

A total of 409 people initiated the survey for this study. However, 187 were excluded for not fulfilling the inclusion criteria or for failing to complete significant portions of the survey. Of the 222 respondents who were included in the analyses, 44.8% identified as non-Hispanic, African American/Black; 28.3% identified as Hispanic (White, African American/Black, or Asian); and 26.9% identified as American Indian. Participants were between 18 and 81 years old (M = 35.24, SD = 14.12). Most were single (54.3%) females (69.2%), with an advanced degree (39.2%), and an average Body Mass Index (BMI) of 29.21 (SD = 12.88). The median income was $50,000. A complete list of participant characteristics is provided in Table 1.

Table 1

Participant Characteristics (N = 222)

Demographic	*n*	%
Race/ethnicity		
African American/Black	99	44.8
Hispanic/Latino(a)/Spanish	63	28.3
American Indian	60	26.9
Sex		
Male	68	30.8
Female	153	69.2
Education level		
<High school	1	0.5
High school graduate	15	6.8
Vocational/trade/technical school	5	2.3
Some college	41	18.5
Bachelor's degree	73	32.9
Advanced degree	87	39.2
Geographic region		
West	22	10
Midwest	14	6.3
South	181	81.9
Northeast	4	1.8
Marital status		
Married	80	36
Widowed	2	0.9
Divorced	18	8.1
Separated	1	0.5
Single	121	54.3
Weight status[a]		
Underweight	4	2.13
Normal	56	29.79
Overweight	53	28
Obese	76	40

[a]Only participants who reported their height and weight were included (N = 188)

Discriminatory Stress

The Schedule of Racist Events-Generic (SRE-G) was used to examine participants' encounters with discrimination from the past year (recent), over their lifetime, and the appraised stressfulness of the events. The recent and lifetime SRE-G subscale scores can range from 18 to 108, and the appraisal subscale scores can range from 18 to 102. Participants reported an average score of 36.50 (*SD* = 14.1; range = 18.0–104.0) for recent and 45.21 (*SD* = 15.80; range = 18–103) for lifetime discriminatory encounters, and their perceived stressfulness was an average of 58.27 (*SD* = 22.95; range = 17–102). The percentage of the sample that reported experiencing specific recent and lifetime discriminatory events is listed in Tables 2 and 3, and the appraised stressfulness of those encounters is listed in Table 4.

Table 2

Percentage of Sample Reporting Specific Discriminatory Events (Recent)

Item	No	<10% of the time	10–25% of the time	26–49% of the time	50–70% of the time	>70% of the time	Yes
1. Teachers/professors	57.7	22.5	14.4	3.6	0	1.8	42.3
2. Employer/boss	49.1	25.2	14.0	6.3	3.6	1.8	50.9
3. Colleagues	36.5	23.4	24.3	10.8	2.7	2.3	63.5
4. Service jobs	28.4	36.5	18.5	12.2	3.2	1.4	71.6
5. Strangers	22.5	29.3	29.7	14.0	3.2	1.4	77.5
6. Helping jobs	59.9	19.8	13.1	3.6	2.3	1.8	40.1
7. Neighbors	59.9	23.0	9.5	6.3	0.9	0.5	40.1
8. Institutions	50.9	25.2	11.3	7.7	2.7	2.3	49.1
9. Friends	55.0	24.8	14.0	5.0	0.5	0.9	45.0
10. Accused/suspected	65.3	19.4	6.8	5.0	2.7	0.9	34.7
11. Intentions	36.5	29.3	15.8	12.2	4.1	2.3	63.5
12. Wanted to tell off	17.1	19.4	18.9	22.1	11.3	11.3	82.9
13. Felt really angry	28.8	31.1	16.7	9.5	6.3	7.7	71.2
14. Took drastic steps	82.9	11.7	1.8	1.8	0.9	0.9	17.1
15. Called racist names	58.6	24.8	11.7	3.6	0.5	0.9	41.4
16. Argument/fight	41.4	23.4	18.5	12.6	3.2	0.9	58.6
17. Made fun of/harmed	76.6	12.6	5.4	2.7	2.3	0.5	23.4
	Same	A little different	In a few ways	In a lot of ways	In most ways	Totally Different	
18. How different would life be without past-year discrimination?	38.3	10.3	17.1	12.6	4.5	7.7	

Table 3

Percentage of Sample Reporting Specific Discriminatory Events (Lifetime)

Item	No	<10% of the time	10–25% of the time	26–49% of the time	50–70% of the time	>70% of the time	Yes
1. Teachers/professors	17.6	26.6	35.1	14.4	3.6	2.7	82.4
2. Employer/boss	27.0	24.3	25.7	15.8	5.0	2.3	73.0
3. Colleagues	14.4	26.6	32.4	22.5	2.7	1.4	85.6
4. Service jobs	18.9	28.8	24.8	20.3	4.5	2.7	81.1
5. Strangers	10.4	26.6	34.2	23.0	4.1	1.8	89.6
6. Helping jobs	39.2	31.5	18.0	5.4	3.6	2.3	60.8
7. Neighbors	43.2	24.3	22.1	6.8	2.3	1.4	56.8
8. Institutions	28.4	30.6	20.3	14.4	4.1	2.3	71.6
9. Friends	34.2	31.1	20.3	12.2	1.4	0.9	65.8
10. Accused/suspected	41.4	27.9	16.7	9.0	3.6	1.4	58.6
11. Intentions	21.2	32.0	18.9	18.9	4.5	4.5	78.8
12. Wanted to tell off	8.1	19.8	18.5	27.9	11.7	14.0	91.9
13. Felt really angry	14.0	29.3	22.5	16.7	7.7	9.9	86.0
14. Took drastic steps	70.3	18.0	6.8	3.6	0.9	0.5	29.7
15. Called racist names	21.2	35.1	27.9	12.2	2.3	1.4	78.8
16. Argument/fight	25.7	25.7	26.6	14.9	5.4	1.8	74.3
17. Made fun of/harmed	46.4	27.0	14.0	8.1	2.3	2.3	53.6
	Same	A little different	In a few ways	In a lot of ways	In most ways	Totally Different	
18. How different would your life be without lifetime discrimination?	22.5	20.7	19.8	16.2	7.2	13.5	

Table 4

Appraisal of Racist Events Over Lifetime and Previous Year (In Percentages)

Item	Not at all stressful 1	2	3	4	5	Extremely Stressful 6	Racism was a source of stress
1. Teachers/professors	21.7	5.9	12.7	22.6	21.7	15.4	78.3
2. Employer/boss	26.7	6.3	8.6	12.7	21.3	24.4	73.3
3. Colleagues	19.0	5.0	15.8	18.6	20.4	21.3	81.0
4. Service jobs	16.3	9.5	18.1	21.3	17.2	17.6	83.7
5. Strangers	36.7	5.4	8.1	17.2	15.4	17.2	63.3
6. Helping jobs	43.2	10.5	11.8	10.0	12.7	11.8	56.8
7. Neighbors	37.1	7.2	10.9	14.5	14.9	15.4	62.9
8. Institutions	43.0	5.9	7.7	10.9	13.6	19.0	57.0
9. Friends	23.9	8.6	13.1	15.3	17.1	22.1	76.1
10. Accused/suspected	9.0	5.4	12.2	18.9	21.6	32.9	91.0
11. Intentions	9.0	5.4	12.2	18.9	21.6	32.9	91.0
12. Wanted to tell off	15.3	6.8	8.6	15.3	23.9	30.2	84.7
13. Felt really angry	59.1	4.5	4.5	7.3	7.7	16.8	40.9
14. Took drastic steps	25.2	7.7	14.0	18.0	18.9	16.2	74.8
15. Called racist names	23.9	8.6	10.4	21.6	15.8	19.8	76.1
16. Argument/fight	45.9	6.3	9.0	10.4	12.2	16.2	54.1
17. Made fun of/harmed	45.9	6.3	9.0	10.4	12.2	16.2	54.1

A Kruskal-Wallis test was used to compare reported mean differences of recent and lifetime experiences of racial discrimination across the racial/ethnic groups. Significant differences were found for recent discrimination ($\chi^2(2) = 6.68$, $p = .035$) and lifetime racial discrimination ($\chi^2(2) = 12.26$, $p = .002$), supporting the hypothesis that there would be differences in discrimination across the racial/ethnic groups. Mann-Whitney U tests were run to determine the nature of the differences for lifetime and recent discrimination among the racial/ethnic groups, and the Bonferroni adjustment was used to reduce the risk of type I errors ($p < .017$). Although there were no significant differences in reported lifetime discriminatory events between American Indians (*Mdn* = 41.00) and Hispanic/Latino(a)/Spanish participants (*Mdn* = 39.00, $U = 1857.50$, $p = .869$), African Americans/Blacks (*Mdn* = 49.00) experienced significantly higher amounts of lifetime encounters of discrimination compared to both American Indians (*Mdn* = 41.00, $U = 2204.50$, $p = .007$) and Hispanic/Latino(a)/Spanish Americans (*Mdn* = 39.00, $U = 2222.00$, $p = .002$). African American/Black participants also reported higher amounts of discrimination over the past year (*Mdn* = 36.00) compared to Hispanic/Latino(a)/Spanish American participants (*Mdn* = 31.00, $U = 2400.50$, $p = .014$); however, there were no significant differences of recent discrimination between American Indians and African American participants ($U = 2517.50$, $p = .108$) and between American Indians and Hispanic/Latino(a)/Spanish participants ($U = 1728.00$, $p = .412$).

A Kruskal-Wallis test was also used to compare how stressful racial/ethnic minority groups appraised these events, and there was a significant difference observed in discriminatory stress between racial/ethnic groups ($\chi^2(2) = 10.50$, $p = 0.005$). To determine the differences in appraised stressfulness of these experiences, a series of Mann-Whitney U tests were used. African Americans/Blacks (*Mdn* = 66.00) appraised these experiences to be significantly more

stressful than American Indians (*Mdn* = 41.00, *U* = 2204.50, *p* = .007) and Hispanic/Latino(a)/Spanish Americans (*Mdn* = 55.00, *U* = 2399.50, *p* = .013). However, there were no significant differences in perceived stressfulness of discriminatory events between American Indians and Hispanic/Latino(a)/Spanish participants (*U* = 1848.50, *p* =.834).

In addition to racial/ethnic differences, a number of other demographic variables were analyzed for potential differences in recent and lifetime experiences of discrimination and the perceived appraisal of these events. It was hypothesized that there would be significant differences in discrimination between males and females. Mann-Whitney U tests were used to assess differences in reported discrimination in the past year and over one's lifetime between males and females. There was no difference in reported lifetime discrimination between the two sexes (*U* = 4720.00, *p* = .272). However, there was a significant difference when comparing the means of the two sex's past year discriminatory encounters (*U* = 4172.50, *p* = .019). Males (*Mdn* = 31.00) reported significantly less encounters with discrimination over the previous year compared to females (*Mdn* = 35.00). Additionally, a Mann-Whitney U test was used to compare differences in perceived stressfulness of discrimination between males and females, but there were no significant differences observed in appraisal of discriminatory events between the sexes (*U* = 4476.00, *p* = .098).

For both geographic region and education level, Kruskal-Wallis tests were used to compare differences in discrimination in the past year and over one's lifetime and perceived stressfulness of these events. Contrary the research hypothesis, reported discrimination did not differ across the geographical regions for recent encounters with discrimination (*U* = 2.77, *p* = .43) or lifetime discriminatory experiences (*U* = 2.21, *p* = .53), and the appraisal of these events were also not significantly different (*U* = 3.76, *p* = .29). Another research hypothesis was not

supported since educational status also did not produce any significant differences for discriminatory events from the past year ($U = 3.25$, $p = .662$) or over one's entire lifetime ($U = 3.001$, $p = .699$); nor were there any differences for the perceived stressfulness of these experiences ($U = 2.60$, $p = .76$). However, the lack of differences in discrimination across educational levels is consistent with the majority of prior research. A complete list of SRE-G descriptive statistics can be viewed in Table 5.

Table 5

Median Differences in Schedule of Racist Events-Generic Scores Across Demographic Measures

Measure	Recent Discrimination *Mdn*	Lifetime Discrimination *Mdn*	Stress Appraisal *Mdn*
Race/ethnicity (*N* = 222)			
Black	36.00	49.00	66.00
Hispanic/Latino(a)/Spanish	31.00	39.00	55.00
American Indian	33.00	41.00	48.50
Sex (*N* = 221)			
Males	31.00	42.00	56.00
Females	35.00	43.50	62.00
Geographic region (*N* = 221)			
West	34.50	47.00	63.00
Midwest	32.50	48.00	54.50
South	32.00	43.00	58.50
Northeast	40.00	53.00	69.00
Educational level (*N* = 222)			
Less than high school[a]	50.00	74.00	73.00
High school graduate	35.00	43.00	48.00
Vocational/ trade/ technical school	32.50	43.00	49.00
Some college	35.00	42.00	55.00
Bachelor's degree	33.00	43.00	59.00
Advanced degree	32.00	43.00	62.00

[a]Only one participant reported less than high school as their highest level of education

Overeating

Participants reported overeating an average of 4.55 days (*SD* = 6.89; range = 0–28) in the past 28 days. Across each race/ethnicity, African Americans/Blacks averaged 5.13 days (*SD* = 7.11), Hispanic/Latino(a)/Spanish Americans averaged 5.67 days (*SD* = 6.47), and American Indians averaged 7.17 days (*SD* = 7.86) of overeating. To assess potential overeating differences between the racial/ethnic groups, a Kruskal-Wallis was run. There was not a significant difference in reported days of overeating across race/ethnicity, $\chi^2(2) = 4.286$, $p = .117$.

A Mann-Whitney U test was run to assess potential differences in overeating between males and females. Contrary to the research hypothesis, males (*Mdn* = 3.50) and females (*Mdn* = 3.00) did not differ in their reports of overeating from the past 28 days (*U* = 5030.00, $p = .69$). Potential differences in overeating were also assessed across geographical regions using a Kruskal Wallis test; however, no differences in reported overeating were found between the West (*Mdn* = 2.00), Midwest (*Mdn* = 1.00), South (*Mdn* = 3.00), and Northeast (*Mdn* = 7.00, $\chi^2(3) = 5.04$, $p = .169$).

Overeating was further assessed across various weight statuses using a series of Kruskal-Wallis tests. Only participants who reported their weight and height were considered for statistical analysis (*N* = 188). The few participants with a BMI <18.5 (*n* = 4) were excluded from the analyses. As hypothesized, reports of overeating differed significantly by weight status ($\chi^2(2) = 17.37$, $p < .001$). The Mann-Whitney U test was run to determine where the significant differences occurred, and the Bonferroni adjustment was used when assessing these statistics ($p < .017$). Participants with obesity reported more days of overeating (*Mdn* = 5.00; *U* = 1263.50, $p < 0.001$) as compared to normal weight participants (*Mdn* = 1.00). Participants with obesity also overate (*Mdn* = 5.00) significantly more than participants categorized as overweight (*Mdn* =

3.00; $U = 1495.00$, $p = .019$), but these results were not significant when accounting for the Bonferroni adjustment. Additionally, no differences were found between normal weight participants ($Mdn = 1.00$) and participants categorized as overweight ($Mdn = 3.00$, $U = 1203.50$, $p = .114$).

Binge Eating

The majority (n = 137; 61.7%) of participants reported feeling out of control during one or more instances of overeating. A chi-squared test was used to assess whether the research hypothesis was supported that binge eating would vary by race/ethnicity, and a statistically significant difference was found $X^2(2, N = 222) = 6.42$, $p = .04$. A higher proportion of Hispanic/Latino(a)/Spanish Americans (68.3%) and American Indians (70.0%) reported binge eating compared to African American/Black participants (52.5%). A chi-squared test was also used to assess proportional differences in binge eating across weight statuses and sexes. Although binge eating did not differ significantly across weight statuses ($X^2(3, N = 188) = 7.38$, $p = .061$), there was a significant difference between sexes ($X^2(1, N = 221) = 4.21$, $p = .04$). A higher proportion of females (66.0%) were considered binge eaters compared to males (51.5%).

Discriminatory Stress and Overeating

The relationship between overeating and discriminatory stress was assessed using the Kendall's Tau correlation. A number of significant correlations supported the central hypothesis that overeating would be positively associated with discriminatory stress. A weak positive correlation was found between overeating and lifetime ($r_\tau = .192$, $p < .001$) and recent ($r_\tau = .155$, $p = .001$) discriminatory encounters, as well as the perceived stressfulness of these encounters ($r_\tau = .152$, $p = .001$). Those with higher SRE-G scores reported more incidences of overeating.

CHAPTER V: DISCUSSION

The purpose of the current study was to investigate the relationship between discriminatory stress and overeating among racial/ethnic minority adults. Research has already evidenced discriminatory stress' physiological impact on racial/ethnic minority health (Brody et al., 2018; Lee et al., 2017; Simons et al., 2018). However, its further influence on health behaviors, such as eating habits, would not only increase the risk for a number of health problems (e.g., cardiovascular disease or diabetes), but it would exacerbate the obesity health disparity and widen the gap in health status between racial/ethnic minorities and the White majority (Jastreboff et al., 2018).

Discrimination was a major source of stress for the study sample. More than half of the sample reported encounters with discrimination across each of the settings listed in the Schedule of Racist Events-Generic (SRE-G) to be stressful. Whether participants encountered discrimination from colleagues, neighbors, strangers, etc., these experiences generated feelings of stress. Specifically, participants felt misunderstood and accused/suspected due to their racial/ethnic group, and a significant proportion (32.9%) perceived this to be extremely stressful. In addition to stress, these encounters generated feelings of anger and made participants want to speak out. As the country is currently focused on racial injustice due to recent instances of police brutality, racial/ethnic minorities feel very strongly about discrimination, and despite reports of infrequent encounters with discrimination, each instance nevertheless was a potent and stressful experience.

Racism and discrimination may be unanimously experienced by racial/ethnic minorities, but like their historical journeys for equality, their discriminatory experiences are unique to their race/ethnicity and culture (Clark et al., 1999; Clark & Winterowd, 2012; Huynh et al., 2012).

There were several racial/ethnic differences across the SRE-G. African Americans/Blacks reported significantly more encounters with discrimination over their lifetime and a higher perceived stressfulness of discriminatory experiences compared to both American Indian and Hispanic/Latino(a)/Spanish participants. These results are not surprising considering the current focus on police brutality against this population. As a result, Black participants may have been more aware of their discriminatory experiences and particularly sensitive to its sting. However, their encounters with recent discrimination were only higher than Hispanic participants, and additionally, there were no differences in reports of recent and lifetime discriminatory events and the perceived stressfulness of these events between American Indian and Hispanic participants.

The current study's findings of higher discriminatory stress among African Americans/Blacks mirror Utsey et al.'s study on race-related stress and ethnicity. Compared to Asian and Latino Americans, African Americans/Blacks reported significantly higher amounts of race-related stress (Utsey et al., 2002). The current study's results are also similar to Lang who found racial/ethnic differences for each SRE-G subscale (2001). In contrast, though, American Indians reported the most encounters of discrimination in regard to the past year and across their entire lifetime, and despite differing from Anglo American participants in their appraisal of these experiences, appraisal did not differ across each racial/ethnic minority. Lang suggested that although each group may have differing experiences and frequencies of racism, discrimination negatively impacts all racial/ethnic minorities.

Differences in discriminatory stress were also examined between males and females, but the sexes only differed in their reports of discrimination from the past year. According to the theory of intersectionality, an individual's demographic and personal characteristics interact to determine one's discriminatory experiences (American Psychological Association [APA], 2017;

Hernandez &Villados, 2020). Female participants may encounter more microaggressions than their male counterparts because in addition to being a racial/ethnic minority, they are also a sexual minority. Female participants in Jones' and Galliher's (2015) study reported higher (insignificant) amounts of microaggressions than males. Recent efforts such as the Me Too Movement have encouraged women to unite and speak out against sexism and sexual injustice. This shift in female advocacy has caused many to acknowledge the sexist discrimination in their own lives, and it may have contributed to female participants' higher reports of discrimination from the past year. Despite this significant difference, there were no other differences in the discriminatory experiences across one's lifetime and perceived stressfulness of discrimination between males and females.

Other studies have also failed to establish a difference in discriminatory stress across levels of education, gender differences, and income stratifications (Lang, 2001; Simons et al., 2018). The current study supported these studies, finding no differences for any of the SRE-G subscales among various weight statuses and levels of education. However, differences in discriminatory stress have been established between racial/ethnic groups (Gong et al., 2017; Lang, 2001; Utsey et al., 2002). These results imply that race/ethnicity may be one of the key determinants of discrimination. Certain races may be at more risk for encountering discrimination more frequently, which could magnify the role these experiences play in impairing the health status of racial/ethnic minorities.

In addition to discriminatory stress, the current study also sought to investigate differences in overeating across races/ethnicities, sexes, and weight statuses. Previous studies have found no difference in binge eating among racial/ethnic minorities (Kelly et al., 2015; Reslan and Saules, 2013; Thurston et al., 2018; White and Grilo, 2011). However, research has

evidenced a higher incidence of binge eating among racial/ethnic minorities compared to the White majority (Harrington et al., 2006; Reslan and Saules, 2013). Although overeating was statistically similar among the racial/ethnic minorities of this study, their reports may be higher than their White counterparts.

Although overeating did not differ between males and females, overeating differed across various weight statuses. Those who have obesity tend to overeat more than normal weight individuals (Görlach et al., 2016). Participants with obesity reported significantly more incidences of overeating compared to participants at a normal weight and those with excess weight, but the difference in overeating between those with obesity and excess weight were not significant when accounting for the Bonferroni adjustment. There were also no differences in overeating between individuals with a normal weight compared to those with excess weight. In a study investigating differences in hormonal responses to food cues and stress, only participants with excess weight or obesity exhibited increased food craving in response to stress (Sinha et al., 2019). These hormonal changes cause individuals affected by obesity or excess weight to be more susceptible to eating in the absence of hunger, and individuals with obesity may be more likely to use overeating or binge eating as a coping mechanism for discrimination. Not only does overeating increase the risk for obesity, but it also exacerbates the health of these populations (Kumanyika et al., 2012). When excess calories are continually consumed, the body is forced to store the energy as fat. Excess adipose can increase the risk for insulin resistance, cardiovascular disease, and even some forms of cancer (Jastreboff et al., 2018).

Fortunately, research has evidenced the benefits of small, lifestyle changes in improving the health those affected by obesity. A randomized control trial comparing a dieting regime to a non-diet alternative which focused on intuitive eating and positive body image found

improvements in both groups' cholesterol, blood lipids, and blood pressure after six months (Bacon et al., 2002). Participants in a clinical trial which focused on increasing fruit and vegetable intake exhibited significant improvements in blood pressure despite a lack of weight loss (Appel et al., 1997). However, modest weight loss of only 5–10% of initial body weight has been evidenced to improve glycemic control, blood pressure, and blood cholesterol levels (Goldstein, 1992). Small lifestyle changes (e.g., increasing fruit and vegetable intake or focusing on internal hunger and satiety cues) can reap massive benefits.

In addition to overeating, participants were asked to recall the number of days they felt a loss of control over their eating on days that they overate. More than half of the sample experienced this loss of control on one or more occasions of overeating and were therefore considered binge eaters. However, the proportion of bingeing did not vary by weight status but was prevalent across normal, overweight, and obese participants alike. Didie and Fitzgibbon (2005) found similar results in a study examining binge eating disorder. Influential factors of binge eating did not vary by weight status. Although binge eating increases the risk for obesity, it is not only characteristic of the obese population but may be prevalent across a variety of weight statuses.

Despite a lack of weight status differences, binge eating was proportionally different among the sexes and the racial/ethnic groups. A larger proportion of females were considered binge eaters compared to males. In a sample of adults from a cross-sectional study, female participants had more food cravings than their male counterparts (Chao et al, 2016). There may be physiological differences that put females at higher risk for engagement in binge eating. Similarly, there was a larger proportion of binge eaters among American Indians and Hispanic/Latino(a)/Spanish Americans compared to African Americans/Blacks in the current

study. Previous research has failed to find racial/ethnic differences in binge eating (Chao et al., 2016; Reslan & Saules, 2011). However, in other studies, African Americans/Blacks were at a decreased risk for binge eating compared to Caucasian participants (Harrington et al., 2006; Reslan & Saules, 2011). Dietary restraint may be a key factor in contributing to binge eating engagement, and this behavior is not typically characteristic of African Americans/Blacks (Harrington et al., 2006). This may act as a protective factor to reduce incidences of binge eating among African Americans/Blacks compared to other racial/ethnic groups.

Nevertheless, binge eating was seen across a variety of participant demographics and was prevalent among the current study's sample. If left untreated, not only can binge eating develop into an eating disorder, there are other health consequences that can detriment a binger's health status. In addition to increasing the risk for obesity, binge eating can increase the risk for major medical disorders, depression, anxiety, and body dissatisfaction (Bulik et al., 2002; Wilson et al., 1993. Considering the clinical implications, more research should investigate potential prevalence differences among these subpopulations in order to create more effective interventions to mitigate binge eating's impact on racial/ethnic minority health.

Despite the number of significant differences found in the current study, the central aim was to establish a relationship between overeating and discriminatory stress, and as hypothesized, overeating was positively associated with each SRE-G subscale. These associations were modest, but similar research has found similar associations as well when assessing the relationship between binge eating and discriminatory stress. Among a sample of African American women, discriminatory stress was significantly related to binge eating (r = 0.22, $p < .05$; Harrington et al., 2006). These results were replicated among a sample of Latina

women (r = 0.34) and American Indian women (r = .26, p < .01; Clark & Winterowd, 2012; Higgins-Neyland & Bardone-Cone, 2017).

Previous research and the current study illustrate that as discriminatory stress increases, both overeating and binge eating incidences moderately increase as well among racial/ethnic minorities. These implications may seem minor but taken in aggregation with the other detrimental effects of discrimination (e.g., chronic inflammation, insulin resistance, altered telomere length, etc.) these small impacts on eating habits can have major consequences, and it may be another contributing factor to the widening gap in health between racial/ethnic minorities and the White majority (Brody et al., 2018; Lee et al., 2017; Simons et al., 2018).

Clinical Significance

Extensive research has been dedicated to understanding overeating and binge eating among Caucasian women (Christaki et al., 2013; Manzoni et al., 2009; Vieten et al., 2018; Webber et al., 2018). Limited research has investigated these behaviors racial/ethnic minority women (Clark et al., 2012; Harrington et al., 2006; Higgins-Neyland and Bardone-Cone, 2017). The current study adds to the literature by establishing relationships between overeating and discriminatory stress among a sample of racial/ethnic minority men and women.

In addition to physiological factors, discrimination may also be impacting eating habits and increasing the risk for overeating and therefore obesity. Associations between overeating and discriminatory stress were present among participants of a variety of weight statuses. Even those at a healthy weight could be at risk for obesity and other health-related complications. This potential influence on health behaviors would further exacerbate racial/ethnic health disparities and worsen the health status of these populations. It is therefore crucial that health promotion

efforts are mobilized to impede discrimination and to help racial/ethnic minorities effectively cope with the prejudice.

Although anti-discrimination efforts continue to emerge, discrimination is pervasively engrained into American society (Ford & Airhihenbuwa, 2010b). It will take time to eradicate the structural and societal implications of racism. Along with anti-discrimination, health promotion should focus on promoting effective coping strategies for racial/ethnic minorities to mitigate discrimination and its negative impacts on their health. A number of strategies have proven to be efficacious in appraising and dealing with discriminatory stress including active coping, social support, and cultural promotion.

It is important to acknowledge the deleterious impact of discrimination in order to mitigate its impacts on mental health. Several studies have illustrated the importance of active coping mechanisms and their advantage over passive coping. Hernandez and Villodos (2020) tested a form of active coping among a sample of Chicano(a) and Latino(a) college students. Reflective coping involves assessing the stressor and planning strategies to resolve the situation (e.g., role playing or reflection). Unlike reactive or suppressive coping, reflective coping was associated with improved mental health for participants (Hernandez & Villodos, 2020). Similarly, active coping acted as a moderator to buffer the negative impacts of discrimination on social exclusion faced by a group of African immigrant participants (Saasa, 2019). Instrumental support was used in which the participants confided their stressors in others. In addition to active coping, this technique can be further categorized as social support.

Social support may also be key among these populations because of their value for family and collectivism (Beltran et al., 2011; Fu et al., 2014; Garza et al., 2011; Kline et al., 2007; Michielutte et al., 1994). Collective efficacy (the use of community ties for external support and

appraisal of stressors) was protective against race-related stress among a sample of African American adults (Driscroll et al., 2015). Rodriguez et al. (2016), found that Hispanic American participants with higher levels of social support reported less discrimination, and ethnic identity commitment (sense of belonging to a particular ethnic group) acted as a protective mechanism of discrimination among Latino adults in Torres' and Ong's study (2010). By relying and focusing on social networks and group ties, racial/ethnic minorities can lean on one other for collective support to attenuate discrimination's potent sting and to buffer its impact on their health.

Although forms of active coping, including social support, are effective and important, they remain futile without cultural promotion. Health promotion efforts have emphasized the use of tailoring and specificity when creating programs for various populations, and these strategies may be even more vital among racial/ethnic minorities. Discrimination, in essence, is suppressing minority cultures while elevating the White majority. Consequently, a critical part in combating this prejudice is to foster and promote the values and customs of these oppressed groups.

Compared to participants who were not exposed to cultural messages (e.g., racial pride) or cultural history as adolescents, frequent, discriminatory encounters did not impact the resilience of African American young adult participants who reported more experiences with cultural racial socialization (Brown & Tylka, 2011). Specifically, Brown and Tylka (2011) emphasized messages that educate African American youth on cultural legacy and the long-fought battle for equality. The researchers believed that these forms of cultural racial socialization would be powerful combatants to help adolescents overcome discrimination into adulthood.

Berkel et al., conducted a similar study to investigate the impacts of Mexican American values on discriminatory stress (2010). Adolescents who reported more ethnic pride as a result of parental teachings of cultural values (e.g., familialism or religiosity) were less likely to experience mental health symptoms as a result of discrimination (Berkel et al., 2010). Similarly, a program with cultural and language education produced quality of life improvements among both college and community members of the Miami tribe (Shea et al., 2019). Culture and tradition may be protective against prejudice and may help to alleviate some of its associated stress. Considering the significant role race/ethnicity played in determining the current study and previous studies' discriminatory stress levels among participants, culturally tailored programs are essential for helping these populations effectively cope with and combat discrimination.

Limitations

Despite these notable findings, the current study was limited in a number of ways. The study was cross-sectional in nature, and therefore, only associations can be established. The survey was online and self-report, which could give way to either overreporting or underreporting discriminatory stress or eating behaviors. The sample was also less diverse than anticipated. The majority of participants were highly educated, Black females. Consequently, these findings may be less generalizable.

Recruitment was also conducted during the COVID-19 Pandemic. Consequently, in-person recruitment was unfeasible, and methods of contacting potential participants were severely limited. Racial/ethnic minorities are a challenging population to recruit regardless of the circumstances. Well-established recruitment methods that are effective for other groups (e.g., White, middle class Americans) may not work as well for racial/ethnic minorities, particularly those of a lower socioeconomic status. The COVID-19 Pandemic intensified these obstacles of

recruitment by hindering in-person contact. Recruitment was reduced to online or telephone communication, which impeded connections with the target population that are particularly important with this group of people who are hesitant to trust researchers due to negative, historical experiences. The sample was highly educated since college groups and clubs were the most receptive to recruitment since many had been educated on the value of research. Without connecting with the community, socially disadvantaged populations are less likely to participate, and many of these groups also may not have had access to online recruitment methods. Additionally, scores for discriminatory events from the past year may have been lower than normal due to social isolation and work from home that would have decreased potential encounters with racism.

The study was also commenced during 2020 when several racial events ensued. However, the events also acted as a catalyst and encouraged many others to speak out against racial injustice and describe their experiences with racism by participating in the current study. Discriminatory stress scores may have been higher than normal, though, due to heightened attention to discrimination. Combined with the social isolation of COVID, there were many extreme outliers for reports of discrimination (some over-estimated discriminatory experiences; while, others under-estimated these experiences). Additionally, the recent events drove the study to completion. With racism and prejudice exacerbated, racial/ethnic disparities are heightened, which increases the need for the current study and others of the like to uncover the root of these inequities.

Conclusions

The current study sought to investigate the relationship between overeating and discriminatory stress among racial/ethnic minority adults. Overeating was significantly related to

discriminatory stress. As discriminatory stress increased, incidences of overeating subsequently increased as well. This study illustrates another potential link to the obesity health disparity that can be used to create more effective interventions to improve the health of racial/ethnic minority populations. Future studies should investigate this relationship using longitudinal measurements (e.g., food diaries) or more concrete data collection techniques to measure overeating. In addition, it would be beneficial to recruit a more diverse sample of racial/ethnic minorities with equal representation across groups, sexes, and educational levels in order to increase the generalizability of the results.

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Appendix A: IRB Approval Letter

The UNIVERSITY of OKLAHOMA

Institutional Review Board for the Protection of Human Subjects

Approval of Initial Submission – Exempt from IRB Review – AP01

Date: July 15, 2020 **IRB#:** 12264

Principal Investigator: Lois M Coleman **Approval Date:** 07/14/2020

Exempt Category: 2

Study Title: Coping with Discriminatory Stress: Overeating among Racial and Ethnic Minorities

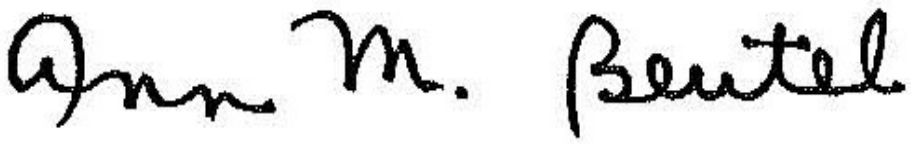
On behalf of the Institutional Review Board (IRB), I have reviewed the above-referenced research study and determined that it meets the criteria for exemption from IRB review. To view the documents approved for this submission, open this study from the *My Studies* option, go to *Submission History*, go to *Completed Submissions* tab and then click the *Details* icon.

As principal investigator of this research study, you are responsible to:

- Conduct the research study in a manner consistent with the requirements of the IRB and federal regulations 45 CFR 46.
- Request approval from the IRB prior to implementing any/all modifications as changes could affect the exempt status determination.
- Maintain accurate and complete study records for evaluation by the HRPP Quality Improvement Program and, if applicable, inspection by regulatory agencies and/or the study sponsor.
- Notify the IRB at the completion of the project.

If you have questions about this notification or using iRIS, contact the IRB @ 405-325-8110 or irb@ou.edu.

Cordially,



Ann Beutel, Ph.D.
Vice Chair, Institutional Review Board

Appendix B: Survey

What is your race? Do you consider yourself…(select one or more):

- White
- Black or African American
- Asian
- Native Hawaiian or other Pacific Islander
- American Indian or Alaska Native
- Other:_____

Are you Hispanic, Latino(a), or Spanish origin?

- Yes
- No

What is your current age in years?

What is your weight in pounds?

What is your height? __feet___inches

What was your annual household earnings in 2019?

How many people TYPICALLY live in your household?

What is your biological sex?

- Male
- Female

In which region of the United States do you currently reside?

- West (e.g., Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming)
- Midwest (e.g., Illinois, Indiana, Iowa, Kansas, Michigan, Missouri, Minnesota, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin)
- South (e.g., Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, Oklahoma, North Carolina, Tennessee, Texas, West Virginia)
- Northeast (e.g., Connecticut, Maine, New Hampshire, Massachusetts, New Jersey, New York, Pennsylvania, Rhode Island, Vermont.)

We are interested in your experiences with discrimination. As you answer the questions below, please think about your ENTIRE LIFE, from when you were a child to the present. For each question, please select the response that best captures the things that have happened to you. Answer each question TWICE, once for what has happened to you IN THE PAST YEAR, and once for what YOUR ENTIRE LIFE HAS BEEN LIKE. Use these numbers:

Select Never = If you have not experienced this scenario
Select Once in a while = If this has happened infrequently (less than 10% of the time)
Select Some times = If this has happened occasionally (10 - 25% of the time)
Select A lot = If this has happened frequently (26 - 49% of the time)

Select Most of the time = If this has happened more than half of the time (50 —70% of the time)
Select Almost all of the time = If this has happened regularly (more than 70% of the time)

1. How many times have you been treated unfairly by **teachers** and **professors** because of your race or ethnic group?
- How many times in the past year?
- How many times in your entire life?
- How stressful was this for you? (1=Not at all to 6=Extremely)

2. How many times have you been treated unfairly by your **employers, bosses** and **supervisors** because of your race or ethnic group?
- How many times in the past year?
- How many times in your entire life?
- How stressful was this for you?

3. How many times have you been treated unfairly by your **co-workers, fellow students** and **colleagues** because of your race or ethnic group?
- How many times in the past year?
- How many times in your entire life?
- How stressful was this for you?

4. How many times have you been treated unfairly by **people in service jobs** (by store clerks, waiters, bartenders, bank tellers and others) because of your race or ethnic group?
- How many times in the past year?
- How many times in your entire life?
- How stressful was this for you?

5. How many times have you been treated unfairly by **strangers** because of your race or ethnic group?
- How many times in the past year?
- How many times in your entire life?
- How stressful was this for you?

6. How many times have you been treated unfairly by **people in helping jobs** (by doctors, nurses, psychiatrists, case workers, dentists, school counselors, therapists, social workers and others) because of your race or ethnic group?
- How many times in the past year? How many times in your entire life?
- How stressful was this for you?

7.How many times have you been treated unfairly by **neighbors** because of your race or ethnic group?
- How many times in the past year?
- How many times in your entire life?
- How stressful was this for you?

8. How many times have you been treated unfairly by **institutions** (schools, universities, law firms, the police, the courts, the Department of Social Services, the Unemployment Office and others) because of your race or ethnic group?
- How many times in the past year?

- How many times in your entire life?
- How stressful was this for you?

9. How many times have you been treated unfairly by people that you thought were your **friends** because of your race or ethnic group?
   - How many times in the past year?
   - How many times in your entire life?
   - How stressful was this for you?
10. How many times have you been accused or suspected of doing something wrong (such as stealing, cheating, not doing your share of the work, or breaking the law) because of your race or ethnic group?
   - How many times in the past year?
   - How many times in your entire life?
   - How stressful was this for you?
11. How many times have people misunderstood your intentions and motives because of your race or ethnic group?
   - How many times in the past year?
   - How many times in your entire life?
   - How stressful was this for you?
12. How many times did you want to tell someone off for being racist but didn't say anything?
   - How many times in the past year?
   - How many times in your entire life?
   - How stressful was this for you?
13. How many times have you been really angry about something racist that was done to you?
   - How many times in the past year?
   - How many times in your entire life?
   - How stressful was this for you?
14. How many times were you forced to take drastic steps (such as filing a grievance, filing a lawsuit, quitting your job, moving away, and other actions) to deal with some racist thing that was done to you?
   - How many times in the past year?
   - How many times in your entire life?
   - How stressful was this for you?
15. How many times have you been called a racist name?
   - How many times in the past year?
   - How many times in your entire life?
   - How stressful was this for you?
16. How many times have you gotten into an argument or a fight about something racist that was done to somebody else?
   - How many times in the past year?
   - How many times in your entire life?
   - How stressful was this for you?
17. How many times have you been made fun of, picked on, pushed, shoved, hit, or threatened with harm because of your race or ethnic group?
   - How many times in the past year?
   - How many times in your entire life?

- How stressful was this for you?

18. How different would your life be now if you HAD NOT BEEN treated in a racist and unfair way?
    - In the Past Year?
    - In your Entire Life?

- Over the past 28 days, how many <u>times</u> have you eaten what other people would regard as an <u>unusually large amount of food</u> (given the circumstances)?
  Number of days:_____
- On how many of these times did you have a sense of having lost control over your eating (at the time that you were eating)?
  Number of days:_____