2023

How do cultural norms shape healthy eating in African Americans? The role of cultural congruence and mindsets of health in healthy eating intentions among African American college students

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How do cultural norms shape healthy eating in African Americans? The role of cultural congruence and mindsets of health in healthy eating intentions among African American college students.

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at Virginia Commonwealth University.

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Acknowledgements

First, I want to give honor to God for His enduring faithfulness to me throughout this journey. I am immensely grateful to my Mom and Dad for your morning pep talks and constant love. I love you both. I am grateful to my family who always reminded me how proud they are. Thank you to my friends, sisters, and loved ones for the laughs, writing breaks, and check-ins. Much love to my Life Church Family for all of your prayers. I extend heartfelt gratitude to my advisor and mentor of 8 years, Dr. Hagiwara. A special thank you to my dissertation committee: Dr. Jones, Dr. LaRose, Dr. Hood, and Dr. Green. A special thank you to my long-term supervisor and bonus mentor, Dr. Bean and the entire HLC family. Huge thanks to my academic big sisters, Randl and Ebony. Shout out to my roomie, Alex and all of my fellow graduate students. Many thanks to my current and past research assistants: Olive, Gia, Abby, and Nya. Much love to my Fit4Kids family, thank you all for molding me professionally since 2015.

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Abstract

HOW DO CULTURAL NORMS SHAPE HEALTHY EATING IN AFRICAN AMERICANS? THE ROLE OF CULTURAL CONGRUENCE AND MINDSETS OF HEALTH IN HEALTHY EATING INTENTIONS AMONG AFRICAN AMERICAN COLLEGE STUDENTS.

By Danyel I. Smith, PhD.

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at Virginia Commonwealth University.

Virginia Commonwealth University, 2023.

Major Director: Nao Hagiwara, PhD., Associate Professor, Department of Psychology.

Background: Targeting dietary behaviors is a predominant strategy to reduce disparate rates of obesity among African Americans across the developmental lifespan. For African American college students, dietary behaviors are shaped by past and present social (e.g., family values, increased agency) and environmental (e.g., food insecurity, enhanced walkability) affordances. Developing effective, culturally-relevant interventions behoove the identification of group-specific factors that inform the multi-dimensional nature of food decision-making among African American college students. This study is grounded in three social psychological theories to unearth cultural mechanisms that inform motivations to eat healthy among African American college students. Specifically, this study used Theory of Planned Behavior as a basis for the current conceptual model, by uniquely integrating identity-based motivation (i.e., how congruent a behavior is with relevant identities) and mindsets of health (i.e., the changeable nature of health). Centralizing culture in food decision-making, this project employed a cross-sectional

(Study 1) and experimental design (Study 2) to contextualize the antecedents of intentions to eat healthy among African American college students.

Methods: Participants were recruited via various digital channels (e.g., SONA portal, highly-trafficked school-wide channels, and student-led, group-text messaging apps). Eligible participants for both studies: were 18+ years; self-identified as Black/African American; were undergraduate students; and did not present eating disorder symptomology. Participation for Studies 1 and 2 was mutually exclusive. Measures assessed behavioral antecedents of TPB (attitudes, injunctive norms, perceived behavioral control), cultural congruence/incongruence, racial identity, mindsets of health, and sociodemographic variables. Via an online survey, Study 1 investigated the direct and indirect effects of cultural (in)congruence on healthy eating intentions. Study 2 experimentally manipulated cultural congruence (congruent vs. incongruent) and mindsets of health (growth vs fixed), using an article. Causal effects of cultural (in)congruence and mindsets of health on healthy eating intentions were tested.

Results: On average**,** Study 1 participants (N = 81) were 20 years of age (M = 19.81, SD = 3.37), female (74%), and first year students (50.6%). There were no direct effects of cultural (in)congruence on healthy eating intentions. However, contrary to our hypothesis, racial identity (particularly nationalist ideology) was a significant moderator, such that individuals with a stronger nationalist ideology reported *more* healthy eating intentions when healthy eating was viewed as culturally *in*congruent (β = 9.96, SE = 3.16, p = .002). Results indicated no indirect effects of attitudes on the relationship between cultural (in)congruence and healthy eating intentions. Study 2 participants (N = 52) were on average 20 years of age (M = 19.92, SD = 2.93), female (65.4%), and first-year students (53.8%). Although the manipulation check suggested that the manipulation did not work as intended, the main hypothesis testing was still conducted because it is plausible that cultural (in)congruence and mindsets of health were

made salient temporarily. A hierarchical regression indicated a main effect of growth mindset on healthy eating intentions (β = .32, p = .02).

Discussion/Conclusion: While the finding for growth mindsets was consistent with our hypothesis (greater growth mindsets predicted more healthy eating intentions), a positive association between cultural incongruence and healthy eating intentions among participants with a strong nationalist ideology was unexpected. This latter finding may reflect psychological reactance. In a racially-tense sociopolitical climate, messages that distinguish and denigrate the health behaviors of African Americans from other groups (e.g., healthy eating) may catalyze psychological reactance that confronts the ascribed norm (e.g., healthy eating is not congruent with the Black identity). This argument is consistent with historical evidence (e.g., Black Panther Party Breakfast Program), which suggests that construal of health and dietary behaviors among African Americans emerges in response to a racialized food system. Future studies of dietary behaviors among African American college students must consider how cultural (in)congruence and mindsets of health 1) develop across the lifespan, 2) apply to other health behaviors, and 3) interact with environmental factors.

Vita

Danyel Smith was born on July 24th, 1995 in Norfolk, VA. She graduated from Oscar F. Smith High School in Chesapeake, VA in 2013. She received her Bachelors of Science in Psychology, Bachelors of Arts in African American Studies, and Masters of Science in Psychology from Virginia Commonwealth University.

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Smith D. Culture, Nutrition, and Health (November 2022) Invited Talk. University of Richmond**.**

Smith, D. [presenting author], Hagiwara, N. Culturally-relevant factors shaping dietary behaviors in African Americans College Students (April, 2022). Oral presentation at *Society for Behavioral Medicine* in Baltimore, MD*.*

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Project Overview

Rates of overweight and obesity among college students are on the rise with over one-third (36.9%) of college students reporting overweight or obesity in 2020 (NCHA, 2020). College students report minimal engagement in a healthy diet—a modifiable determinant of obesity. To understand factors shaping healthy eating with the goal of increasing engagement, prior research has drawn on the theory of planned behavior (TPB, Ajzen, 1991). TPB is a widely used framework to predict intentions and subsequent behaviors. In the context of healthy eating, TPB posits that attitudes towards healthy eating, perceptions of healthy eating from relevant others (i.e., subjective norms), and how confident an individual is to engage in healthy eating (i.e., perceived behavioral control) all predict intentions and subsequent engagement in healthy eating (Connor et al., 2002, Povey et al., 2000 Thompson et al., 2020).

However, prior obesity research applying TPB has omitted culture as a critical construct underlying individual's beliefs and attitudes. This might be due to the fact that prior obesity research applying TPB has been conducted primarily with White college students. Pervasive racial disparities at the population-level, with nearly 50% of African Americans having obesity in 2018, are mirrored at the collegiate level such that the overweight and obesity prevalence rates among African American college students are also higher compared to their White counterparts. This suggests that factors that have been found to be associated with increased intentions to engage in healthy eating among White college students in prior research may not be generalizable to African American college students. The current project will centralize culture within TPB to predict African American college students' intentions to engage in healthy eating. To do so, this project will draw on two independent lines of research–identity-based motivation and implicit theories. The overarching goal of the present study is to examine which and how culturally-informed subjective norms, attitudes, and perceived behavioral control predict healthy eating intentions among African American college students.

Background

The Unequal Weight of Obesity

18-year-old Brianna is a fun-loving African American college student from Durant, Mississippi. When she's not doing coursework, she enjoys going on bike rides and playing dodgeball. When she graduated from high school and transitioned to college at age 18, Brianna's physical activity dwindled and she began to pick up weight. She currently weighs 347 pounds, placing her in the highest obesity weight category (Class III). Lifestyle activities such as walking up the stairs, have become increasingly difficult, not to mention the emotional and psychological toll of exclusion from her peers. As a child, Brianna's mother, Shelia, prepared lunches for community members to supplement her family's income. When asked about foods normally prepared, Shelia noted Turkey wings, fried cabbage, pig feet, and greens. She later said, "Soul Food is a part of the culture. We just like to eat." If she continued on this weight trajectory, Brianna's life expectancy would be much lower than that of her peers within a normal BMI range. From the psychological toll of being excluded from her peers to the inter-generational exchange of food-preparation styles high in saturated fats and sodium, Brianna's story illustrates the physical, psychological, and social costs of obesity (This story is adapted from [Relax Cafe Music, 2020]).

Obesity is medically classified by body mass index (BMI), which reflects the proportion of an individual's weight to height (i.e., calculated as weight [kg]/ [height $(m)^2$]). BMI classifications for normal, overweight, and obese weight statuses can been seen in Table 1 (CDC, 2020c). In the 1960s and 1970s, only 13% of U.S. adults had obesity (Wang & Beydoun, 2007). However, the incidence of obesity has increased dramatically over the past 50 years, such that 42.4% of Americans had obesity in 2017-2018 (CDC, 2020b). On college campuses,

Weight Status	BMI Classification
Underweight	< 18.5
Normal	18.5-25
Overweight	25.0-29.9
Obese	30.0 >
Class I	30-34.9
Class II	35 – 39.9
Class III	40 >

Table 1. BMI Classifications

obesity is also on the rise, such that 36.9% of college students report overweight and obesity (American College Health Association, 2019). The uptick in obesity prevalence is theorized to reflect shifts in food accessibility and decreases in physical activity levels as a result of modernization and changes in socioeconomic growth (McKeown, 2009). *"The modern lifestyle places individuals to live in an obesogenic environment, encouraging us to eat more and exercise less"* (Albuquerque et al., 2017, p. 164).

Obesity increases the risk of and mortality from many life-threatening chronic diseases such as cardiovascular disease, diabetes, and cancer (Hu et al., 2001). Obesity is also associated with increased mood and anxiety disorders, weight related stigma, and a decreased quality of life (Hassan et al., 2003; Petry et al., 2008). Further, increased waist circumference has been linked to increased depressive symptoms in college students (Lazarevich et al., 2013). In addition to physical and psychological costs, obesity is financially costly. Compared to individuals without obesity, those with obesity spent $3,429 more, on average, on medical care costs in 2013 (Biener et al., 2017). In the same year, at the national level, treatments for obesity and obesity-related illnesses (e.g., cardiovascular disease, diabetes) were estimated at 28.2% of total US health care spending (Biener et al., 2017).

Given the detrimental effects of obesity on individual well-being, pervasive racial disparities (i.e., differences that reflect inequitable social, political, economic and psychological processes) in obesity are of paramount concern. Nearly 50% of African Americans had obesity in 2017-2018 (CDC, 2020b)—the highest prevalence amongst any racial-ethnic group. Compared to their White college-educated counterparts, African American college students (both at Historically Black Colleges and Universities and Predominately White Institutions) were twice as likely to have overweight or obesity in a nationally-representative sample of college students across 2011-2015 (Sa et al., 2016). These disproportionate rates in obesity have serious clinical implications for the long-term health of African Americans. African Americans are 1.6 times more likely to be diagnosed with diabetes and 1.3 times more likely to be diagnosed

with hypertension compared to their White counterparts (*Diabetes - The Office of Minority Health*, 2021; *Heart Disease - The Office of Minority Health*, 2021a). The need for solutions to ameliorate the deleterious effects of obesity is urgent.

Capturing Disease Complexity

Given the disease's complexity, obesity interventions require an interdisciplinary, multi-level approach. At its most fundamental level, obesity is viewed as an imbalance between two critical factors—energy intake (i.e., dietary consumption) and energy expenditure (i.e., physical activity). A positive energy imbalance (i.e., more energy intake than energy expenditure) results in weight gain, whereas a negative energy imbalance (i.e., less energy intake than energy expenditure) results in weight loss. Because dietary consumption and physical activity underlie energy intake and expenditure, respectively, these two behaviors are considered critical modifiable determinants of obesity. As a result, many behavior change interventions and clinical recommendations include dietary change and increased physical activity engagement to promote health and decrease obesity's detrimental effects on the body (Boff et al., 2017).

Variability in obesity onset also reflects a dynamic interplay between genetic, environmental and societal influences. With that, obesity is a pervasive multi-etiological disease (Pollack, 2013), which lends researchers and clinicians to investigate its facilitators at all levels of the social-ecological framework. Examining obesity from an ecological approach requires understanding intrapersonal (i.e., knowledge and attitudes), interpersonal processes (i.e., formal and informal social networks, and social support systems); and institutional factors (i.e., rules and policies and

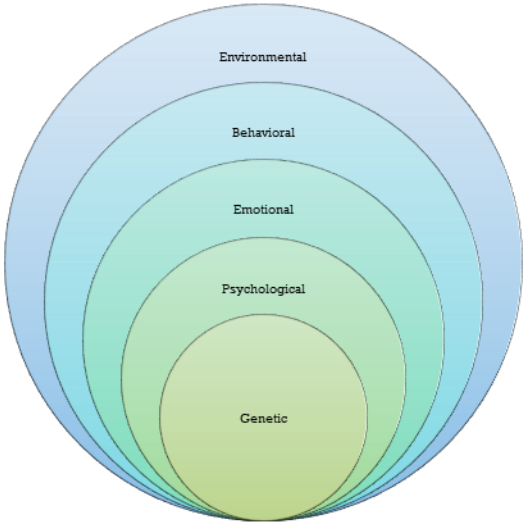


Figure 1. Social Ecological Framework

community factors), which determine individual health dispositions and behaviors (Mcleroy et al., 1988). As a complex interplay between genetic, psychological, social, behavioral, and environmental factors, obesity has several points of intervention (See Figure 1).

Genetically, an individual's BMI is highly correlated with their parental BMI, that is an individual has an increased risk of developing overweight or obesity if their parents had obesity (Albuquerque et al., 2017). In addition, Breen et al. (2006) concluded that individual taste preferences has genetic influences. The dynamic interaction between an individual's biology and the environment also reveals an epigenetic pathway shaping obesity onset. For example, inadequate maternal nutrition has been shown to increase obesity risks in offspring (Gillman et al., 2008).

Interpersonally (reflecting both psychological and emotional processes), individuals with limited social support for health-promotion behaviors (e.g., consumption of fruits and vegetables) report less engagement in health-promotion behaviors (Shaikh et al., 2008) and have an increased risk for obesity onset. In addition, lack of social support from family members is a significant barrier to engagement in a health-promoting diet (Barnett & Praetorius, 2015; James, 2004). Further, social networks –including friends, spouses, partners—significantly influence dietary consumption both quantitatively and qualitatively (Christakis, 2007; Pachucki et al., 2011).

The behavioral pathway shaping obesity through eating behaviors has been well-documented (Dallman et al., 2003; Jackson et al., 2010; Pickett et al., 2020). Stress leads to increased cortisol levels in the body resulting in acceleration of fat storage in the abdomen (Dallman et al., 2003). Further, behavioral responses to stress may increase the risk of weight gain. Specifically, consumption of high fat comfort foods shuts down the body's stress response through a negative feedback loop (Dallman et al., 2003). Thus, eating less nutritious, calorically-dense foods may be psychologically protective, but physically detrimental (Jackson et al., 2010). Eating in response to stress can manifest in routine emotional eating. Previous studies have

demonstrated that emotional eating is associated with increased perceived stress, depression, and an influx in negative emotions (Pickett et al., 2020).

Lastly, the environment can facilitate or impede obesogenic behaviors. For example, an overabundance of high-caloric foods via convenient fast-food restaurants, increased screen-time and limited physical activity engenders an energy imbalance characteristic of obesity (Albuquerque et al., 2017). Previous studies assessing neighborhood design and walkability have found that the presence of a grocery store within 1 kilometer of the home was predictive of a lower risk of obesity (Cerin et al., 2011). These environmental cues underscore the obesogenic nature of one's daily environment, highlighting external barriers to engagement and maintenance in health promotion behaviors.

Taken together, the social ecological framework is extremely useful in identifying factors that contribute to dietary consumption and physical activity at multiple levels. After identifying factors, the next critical step is to organize them in a way that enables researchers to make specific, directional predictions about engagement in dietary consumption and physical activity. One useful theory to achieve this goal is the Theory of Planned Behavior (TPB, Ajzen, 1991). Specifically, TPB helps researchers predict how an individual perceives and interprets a number of external and internal factors identified by using the social ecological framework, which in turn, predicts the individual's intention to engage in dietary consumption and/or physical activity.

Prior to explaining TPB and its' application to obesity research, justification is provided for the study's focus on diet within African Americans. While physical activity is a vital component of energy balance, previous research has shown that diet modification yields more sustainable results in body composition(Redman et al., 2007). This might be because physical activity only accounts for a small portion of total energy expenditure (O'Neal et al., 2017), and calorie deficits are most easily attained through dietary change (Redman et al., 2007). Beyond diet's benefits in weight loss, engaging in a healthy diet consisting of fruits and vegetables, whole grains, and low sodium, fat and red-meat intake has been associated with decreased

weight gain (Rolls et al., 2004), lower risks for high blood pressure (Sacks et al., 2017) and diabetes (Hu et al., 2001). In contrast, consumption of less nutritious, energy-dense foods is not only linked to increased weight gain (Hall et al., 2019), but is also associated with elevated blood pressure and increased pancreatic load and insulin demand, resulting in heightened risks of cardiovascular disease, hypertension, and diabetes (Hall et al., 2019; Hu et al., 2001; Ozemek et al., 2018). Thus, engagement in a healthy diet is not only beneficial to reduce or ameliorate obesity onset, but it also improves overall health. Secondly, racial differences in healthy eating have been reported consistently in prior research. For example, among college students in particular, daily fruit and vegetable consumption (≥ 3 servings) is 28.4% (American College Health Association, 2019). Among African American college students, only 20.8% and 22.1% of students consume more than 3 servings of fruit and vegetables daily at HBCUS and predominately White Institutions, respectively (Sa et al., 2016).

The Theory of Planned Behavior

TPB is one of several theories of behavior change (e.g., theory of planned behavior, transtheoretical model of behavior change) that are designed to uncover sequential and simultaneous psychological mechanisms underlying behaviors. TPB is a continuum model which posits that behaviors are preceded by behavioral *intentions*, which are shaped by salient beliefs (Ajzen, 1991). More specifically, TPB posits that motivation to engage (i.e., behavioral intentions) and overall ability (i.e., behavioral control) jointly influence behavioral engagement (Ajzen, 1991). Behavioral intentions are shaped by three underlying psychological factors: attitudes towards the behavior, subjective norms, and perceived behavioral control. Each of these psychological determinants of intentions are preceded by salient beliefs: behavioral, normative, and control beliefs (Figure 2).

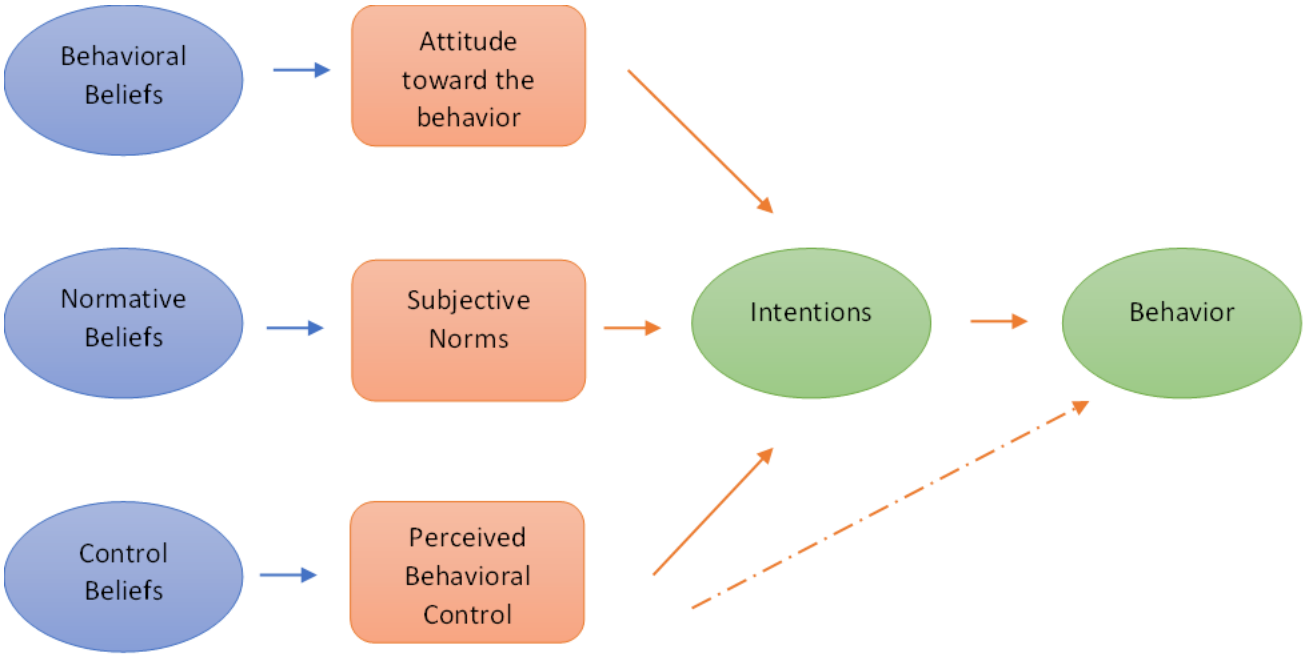


Figure 2. Theory of Planned Behavior

Attitudes towards the behavior refers to the perceived valence (i.e., positive or negative) of the behavior and is underscored by behavioral beliefs. Behavioral beliefs refer to outcome expectancies—the belief that engagement in the behavior will lead to certain outcomes. Further, behavioral beliefs reflect the pros and cons of behavioral engagement (Ajzen, 1991). Later theorists have distinguished between attitudes towards the behavior to explore affective and instrumental evaluation of performing the behavior (Blanchard et al., 2009). Affective evaluation pertains to the perceived enjoyment of engaging in the behavior, whereas instrumental evaluations refer to the perceived benefit or utility of engaging the behavior.

Subjective norms refer to the perceived social pressure to engage in the behavior. Perceptions of subjective norms are further theorized to be shaped by normative beliefs. Normative beliefs refer to the perceptions that relevant individuals approve or disapprove of engaging in the behavior (i.e., injunctive norms, Ajzen, 1991).

Lastly, *perceived behavioral control* refers to one's perceptions of their ability to engage in the behavior (Ajzen, 1991). This construct is equivalent to the combination of self-efficacy (i.e., the extent to which an individual perceives they are capable of performing the behavior necessary to achieve a given outcome; Bandura, 1977) and locus of control (i.e., the extent to which an individual perceives the outcome is due to factors that are internal vs. external to the individual, Wallston, 2005). Perceived behavioral control is predetermined by an individual's control beliefs, which refers to factors that may facilitate or impede engagement in the behavior (Ajzen, 2002). With greater resources (perceived and real) and less barriers, individuals have greater perceived control of the behavior. In sum, TPB posits that intentions to engage in a certain behavior are strongest when an individual has a favorable attitude and subjective norms towards the behavior as well as high perceived behavioral control.

TPB and Healthy Eating

TPB has been widely used to research and intervene on a number of health behaviors and outcomes, including dietary behaviors (Brouwer & Mosack, 2015; Louis et al., 2009; Povey et al., 2000; N. R. Thompson et al., 2020). In the context of healthy eating, TPB predicts that positive attitudes towards healthy eating and its outcomes, perceived social pressure to engage in healthy eating from significant others (i.e., peers, family, and friends), and perceived personal and practical resources to engage in the behavior would result in greater intentions to engage in healthy eating. The section below provides a brief overview of research findings employing TPB to assess healthy eating intentions.

Attitudes toward healthy eating. Attitudes towards healthy eating may be influenced by a myriad of factors informed by the social ecological framework. For example, taste preferences, which have been shown to be genetically influenced or heritable (Breen et al., 2006), may influence the overall enjoyability of healthy foods (e.g., fruits and vegetables). Further, television advertisements have been found to influence attitudes towards both healthy

and unhealthy foods (Dixon et al., 2007). These findings highlight different pathways by which attitudes towards healthy eating are informed and shaped.

Research findings are somewhat mixed regarding the predictive strength of attitudes on healthy eating intentions. For example, Conner and colleagues (2002) examined each component of TPB at three time points over the course of six years in order to predict healthy eating intentions among adults (ages 20-68 years). Results indicated that attitudes toward the behavior along with perceived behavioral control explained 20% of the variance in healthy eating intentions. Similar results were found by Povey et al. (2000), which suggested that attitudes were the strongest predictors of healthy eating intentions among White adults. Among college students, outcome expectancies, which underlie attitudes towards healthy eating, were significantly related to healthy eating intentions (Thompson et al., 2020). In contrast, Brouwer and Mosack (2015) concluded that attitudes were not a significant predictor of healthy eating intentions among a predominantly white sample of women ages 18-53.

Subjective norms. As with attitudes, factors identified within the social ecological framework may influence subjective norms of healthy eating. For example, landmark research examining social networks has concluded that incidence of obesity is related to social networks, such that an individual's risk of obesity increased by 57% if they had a friend who had obesity, and 40% if they had a sibling who had obesity (Christakis, 2007). These results highlight how social networks may underscore subjective norms for health promoting behaviors (e.g., healthy eating).

Findings regarding the predictive power of subjective norms are also mixed. In the same longitudinal study of healthy eating intentions and subsequent eating behaviors reviewed above (Conner et al., 2002), subjective norms were not a significant predictor of intentions. In contrast, in a sample of US adults, subjective norms were found to be positively and significantly related to healthy eating intentions (Povey et al., 2000).

Perceived behavioral control. Perceived behavioral control has shown to be influenced by internal and external resources, such as motivation and social support. In a qualitative study applying TPB, a sample of African American adults (ages 25-60) reported difficulty in breaking habits and lack of motivation as reasons for lack of engagement in healthy eating. Further, participants noted external barriers, such as high cost of healthy foods and limited community resources, to initiate and maintain a healthy diet (Peters et al., 2006). Barroso et al. (2010) corroborates these findings among African and LatinX American young adults (ages 18-19). Internal resources, such as willpower, were diminished as a result of easily accessible fast-food options (external barrier). Participants also reported excessive work demands as a time constraint, yielding convenient fast-food options to be all the more enticing. Lack of resources also resulted in low perceived behavioral control to engage in healthy eating.

Among college students, perceived behavioral control is predetermined by control beliefs, such as issues within the campus dining hall, physical and financial access to fruits and vegetables, and the capacity to store or prepare fresh fruits and vegetables (Blanchard et al., 2009). For African American college students, limited financial and physical access to fruits and vegetables, along with disliking accessible fruits and vegetables, was negatively associated with intentions to consume five servings of fruits and vegetables per day (Blanchard et al., 2009).

Unlike attitudes and subjective norms, perceived behavioral control has consistently demonstrated its predictive strength in healthy eating intentions across age, race, and ethnicity (Blanchard et al., 2009; Blanchard et al., 2009; Brouwer & Mosack, 2015; Povey et al., 2000). In a predominately White sample of adult women, perceived behavioral control was the strongest predictor of healthy eating intentions (Brouwer & Mosack, 2015). Similar results have been found among emerging and older African American adults (Blanchard et al., 2009; O'Neal et al., 2017).

A Major Theoretical Gap in TPB

Overall, components of TPB and the entire model have accounted for 31-52% of the variance in intentions to consume fruit and vegetables in prior research (Blanchard et al., 2009; Conner et al., 2002; Povey et al., 2000). Further, these behavioral intentions have explained nearly 40% of the variance in actual fruit and vegetable consumption (Blanchard et al., 2009; Conner et al., 2002). Thus, TPB is a viable model to assess healthy eating intentions among college students. However, I argue that the mixed findings in prior research, particularly with attitudes toward healthy eating and subjective norms, highlight a major theoretical gap in TPB—the culturally unique context.

The inconsistent findings for the link between attitudes and intentions to engage in healthy eating might be at least partially explained by the nature in which attitudes were assessed. A majority of research that uses TPB to assess healthy eating intentions has analyzed attitudes as a single construct. However, Blanchard et al. (2009) distinguished between affective attitudes (i.e., enjoyment; enjoyable vs. unenjoyable, boring vs. fun) and instrumental attitudes (i.e., perceived benefit; harmful vs. beneficial, bad vs. good) of fruit and vegetable consumption and found racial differences in relative importance of these attitudes (Blanchard et al., 2009). Specifically, White college students had significantly more positive instrumental attitudes than African American college students. Their findings suggest that the benefit of healthy eating may be less relevant to attitudes towards healthy eating among African American college students in comparison to White college students. This is in line with previous findings that enjoyment is a key value shaping food decision-making among African American young adults (Antin & Hunt, 2012). Blanchard et al. (2009) also explored differences in behavioral beliefs that underlie attitudes. Specifically, they assessed the underlying behavioral beliefs that eating five servings of fruits and vegetables will improve health, provide vitamins and minerals, be nutritious, provide energy and provide fiber. African Americans students had behavioral beliefs distinct from the White counterparts. For African American students,

behavioral beliefs that eating fruits and vegetables would provide energy and fiber were associated with intentions to consume five servings of fruits and vegetables. In contrast, for White American students, behavioral beliefs that eating fruits and vegetables would improve health, be nutritious, and provide fiber were associated with increased intentions. These findings also highlight that outcome expectancies underlying healthy eating may be different for African Americans. Taken together, mixed findings in prior research might be due to the failure to take into account different aspects of attitudes that are culturally unique to each social group.

The inconsistent findings for the link between subjective norms and intentions to engage in healthy eating may also reflect the lack of consideration for the types of norms that are culturally unique to different social groups. Subjective norms are most often measured as a single construct with two items (i.e., "*People who are important to me think I should eat healthy*," and "*People who I know well think healthy eating is a 'very good idea' or 'very bad idea*'" (Povey et al., 2000). Few studies have distinguished who the 'relevant others' are (i.e., family, significant others, and professors/coaches) when exploring underlying normative beliefs (C. M. Blanchard, Kupperman, et al., 2009).

What has not been explored among college students is how the actual healthy eating behaviors of relevant others (i.e., descriptive norms) shape subjective norms. Descriptive norms are particularly important to assess among African Americans as diet, recipes, and cooking methods are intergenerationally shared, reflecting a collective history (Peters et al., 2006). African Americans possess a shared history, which extends past one's social network (Peters et al., 2006). This indicates that a group level or collective norm, which transcends personal networks, may be relevant to the entire racial-ethnic group. Specifically, one aspect of African American culture is traditional cuisine, which is transferred from generation to generation. Traditions can be conceptualized as crystallized collective norms enacted across time. Norms can stem from traditions and are driven by the desire to maintain homeostasis (Rimal & Lapinski, 2015). Because diet is intergenerationally transmitted among African Americans and

has cultural significance, it is imperative to understand how these collective norms regarding diet may shape healthy eating intentions.

For example, the content of subjective norms may be more relevant for African Americans than other ethnic groups. In a predominantly African American sample of college students, subjective norms were significant predictors of healthy eating intentions for African American college students but not significant for White American college students (Blanchard et al., 2009). Perceptions of family, significant others, and professors/coaches shaped normative beliefs which influenced subjective norms for African Americans, but not for White American college students. This difference may be due to shared or collective beliefs that undergird African American culture (Blanchard et al., 2009; Peters et al., 2006).

Lastly, the omission of culture from the TPB reflects its inherent W.E.I.R.D. nature, in that TPB has been postulated by researchers and from research samples which are predominately western, educated, industrialized, rich, and democratic. When relying on models that are WEIRD in nature, researchers have a bias towards western culture and an automatic criticism of cross-cultural differences (Medin et al., 2010), even when those cultures reside in the same country (e.g., US). This often leads to viewing cultural differences from a deficit-based lens (Medin et al., 2010), and rids data of heterogeneity (LaVeist, 1994). It should also be noted that much healthy eating research applying TPB has been conducted among predominately White samples. Thus, it is critical to assess how TPB constructs may relate and operate specifically among African Americans.

Taken together, the omission of cultural context in TPB limits researchers in the ability to appropriately conclude underlying mechanisms for racial-ethnic group differences in healthy eating intentions and behavior. Additionally, assessing the role of underlying cultural/collective beliefs in healthy eating intentions of African Americans has important clinical implications. Current interventions are not as effective for African Americans as White Americans. Specifically, African Americans report decreased intervention uptake and engagement

(Kumanyika et al., 2014). This may be due to the lack of cultural relevance of intervention delivery and materials (James, 2004). The following section describes the importance of exploring health behaviors within their cultural context.

The Importance of Studying Culture

Perhaps the dearth of research exploring cultural nuances in health behaviors is due to inconsistencies in the conceptualization and operationalization of culture among psychologists. Anthropologists often characterize culture as a dynamic set of shared values, beliefs, and traditions transmitted across generations, which unifies a group of people (Hudelson, 2004). Notable anthropologist, John Ogbu, defined culture as a set of experiences or "collective consciousness" among a group of people (Ogbu, 2004). Social psychologists, like Markus and Kitayama (2010), have defined culture as patterns of ideas, practices, institutions, products, and artifacts, which do not internally reside but are externally situated. Despite variability in how culture is operationalized across disciplines, one common thread in their conceptualizations is that culture is central to human development (Wertsch, 1986). Consequently, human cognition, language, and emotion are cultural byproducts (Markus & Kitayama, 2010). Culture informs individual's beliefs and values, which are immediate precursors to health behaviors (Cummins et al., 2005).

In prior obesity research, culture has often been conflated with race. However, race is a social construct and fixed category, which fails to capture the complexity of culture. When culture is operationalized as a stable attribute of a particular group – as opposed to a dynamic process-- researchers rid data of heterogeneity and fail to accurately assess nuanced differences in cognition, values, and beliefs which shape health behaviors of interest (LaVeist, 1994; Williams, 1996). Said differently, the use of race in current obesity research and interventions fails to adequately address the complexity and breadth of personal experience, values, and beliefs that are culturally unique to and directly associated with African Americans' dietary consumptions—negating meaningful within-race variability. This conflation of race and

culture likely explains why current interventions lack cultural relevance and are limited in their effectiveness to promote healthy eating among African Americans (Kumanyika et al., 2014).

The Role of Culture in Diets among African Americans

Because culture guides construal of individual behaviors and those of others, it is important to assess how beliefs and attitudes regarding health are situated within the context of culture. For African Americans, food preferences (just like colloquialisms and music choice) emerge as cultural byproducts, which were forged through shared experiences and underlie collective identity. Uniquely, African Americans' cultural byproducts are perpetuated through oppositional forces, particularly White group norms (Ogbu, 2004), which is considered the "mainstream culture" or "the American norms."

Historically, the formation of the African American collective identity was in direct opposition to a "collective experience of oppression and injustice" (Ogbu, 2004, p. 9). In opposition to this oppression, resilience emerged as a critical value underpinning the African American collective identity. For example, during the time of enslavement, cooks transformed less desirable meats (e.g., pig intestines) into delectable meals (e.g., chitterlings a.k.a. "chitlins") through various cooking methods (e.g., frying with lard). This ability to create "new" or "better" from nothing, highlights only a fraction of the resilience of African Americans. These cooking methods were transmitted intergenerationally and would eventually be coined, "Soul Food" in the mid 1960's (Henderson, 2007).

Given its historical and cultural significance, Soul Food, to many African Americans, is deeper than the food itself. Consumption of Soul Food can be perceived as the manner by which one adheres to group norms, which in turn serves to maintain collective identity. In contrast, consuming food in accordance with the opposite (i.e., White) identity (e.g., vegan diet) is equated with renouncing one's identity and often results in identity denial by others (e.g.,

accusations of acting white; Ogbu, 2004). Because the African American collective identity was formed in opposition to White identity, this creates an dialectical (i.e., oppositional) cultural frame of reference, meaning that engagement in behaviors which cross cultural boundaries will result in *intra*personal tension and *inter*personal stigmatization (Ogbu, 2004). For example, African Americans who engage in a vegan diet have reported being ostracized by family and friends (Greenebaum, 2018).

Expanding TPB to Include Culture

Because culture shapes individuals' beliefs and perceptions about what behaviors are congruent vs. incongruent to collective identity, it plays a central role in understanding and predicting all three factors contributing to healthy eating intentions and behavior: attitudes, subjective norms, and perceived behavioral control. To elucidate how culture shapes attitudes, subjective norms, and perceived behavioral control in the context of healthy eating, this proposed research not only draws on but also bridges two independent lines of research: identity-based motivation (IBM; Oyserman et al., 2007a) and implicit theories (Dweck & Leggett, 1988).

Identity-Based Motivation and Health

Drawing on social identity theory, IBM posits that individuals engage in behaviors that are congruent with their salient social identities. The theory further posits that it is the salient social identity and adherence to group norms that drives the behavior, not the behavior's consequences or repercussions. As said by Oyserman and colleagues (2007b), "[…] identity-infused behaviors are engaged in less for their health consequences than for their identity consequences" (Oyserman et al., 2007a, p. 1011). In short, behavioral engagement is motivated by desired inclusion in relevant social identities. In the context of health behaviors, IBM predicts that individuals will engage in health behaviors that are viewed as congruent with their group identity (Oyserman et al., 2007a). In contrast, individuals will not engage in health behaviors that are viewed as incongruent with their group's identity or characteristic of outgroup members.

As previously mentioned, the African American identity is often oppositional to the White American social identity (Ogbu, 2004). Consequently, behaviors congruent with the White American identity are more likely to be viewed as incongruent with the African American social identity. In fact, prior IBM research has shown that engagement in a healthy diet (i.e., consumption of fruits and vegetables, low fat intake) is perceived as part of the White, middle-class social identity. For example, one study demonstrated that overall racial-ethnic minorities were less likely to report engagement in health promotion behaviors (i.e., eating healthy, exercising) as in-group defining (Oyserman et al., 2007a). Such perception then discouraged African Americans from engaging in a healthy diet, particularly when the salience of racial identity was experimentally manipulated. This is because consuming other—perhaps less nutritious—foods is more likely to be included in the African American social identity (Oyserman et al., 2007a). IBM demonstrates the downstream impact of group/collective norms on the self and individual behavior, and thus provides pivotal insight into attitudes and subjective norms within TPB.

How does IBM inform the current effort to expand TPB? IBM is useful for predicting culturally-informed attitudes towards healthy eating and culturally-informed subjective norms. The original TPB posits that attitudes (both affective and instrumental) are predicted by *outcome expectancies* of behavioral engagement (Ajzen, 1991). However, as discussed above, IBM posits that it is not outcome expectancies but social identity and adherence to group norms that predicts the behavior (Oyserman et al., 2007b). For example, one study demonstrated that salient identities can influence instrumental attitudes and behavioral beliefs shaping healthy eating. In this study, Oyserman and colleagues (2007) primed racial identity in a sample of African American college students through an exercise where participants listed similarities between African Americans and White Americans. Those in the racial salient group were tasked to generate 10 similarities between African Americans and White Americans, whereas participants in the control (non-salient) group were tasked to generate a shorter list of (only

three) similarities. The racially salient group experienced greater difficulty in generating similarities between themselves and White Americans—making group differences more apparent than similarities. Participants then rated the utility of healthy eating (i.e., how much a person's health is influenced by eating healthy foods). Results indicated that African Americans who were primed to have a stronger or more salient racial identity viewed healthy eating as having less utility than African Americans in the non-salient group (Oyserman et al., 2007a). Regardless of experimental group, African Americans were more likely to report unhealthy behaviors (i.e., engagement in a less nutritious diet, limited physical activity) as more in-group defining than healthy behaviors (Oyserman et al., 2007a). Taken together, these results highlight the prominent role of identities and group/collective norms in the perceived benefit of healthy eating (i.e., utility) and the personal relevance (i.e., value or congruence) of the behavior.

Turning to subjective norms, the original TPB posits that subjective norms are shaped by the perceived approval or disapproval of engagement in the behavior by relevant others. IBM further enables researchers to specify the relevant reference group, which determines appropriate behaviors for its members. Adherence to group-specified behaviors engenders group norms and maintains group/collective identity. Thus, IBM demonstrates the dynamic influence between sociocultural contexts and individual behavior (Stephens et al., 2012). For example, African Americans have reported that attitudes regarding health are collectively informed and intergenerationally shared (Peters et al., 2006). Moreover, African Americans have noted that the motivation to avoid identity denial (i.e., accusations of acting White) is –at times—greater than motivation to engage in a health promotion behaviors (Peters et al., 2006). If some African Americans view engaging in a healthy diet as out-group defining (Oyserman et al., 2007a), then it is likely that an individual will assume that relevant others (i.e., family, friends) disapprove of the behavior (i.e., injunctive norms) and will not observe relevant others engaging in a healthy diet (i.e., descriptive norms).

Taken together, IBM strengthens researchers' abilities to capture the process by which culture (1) influences individuals' attitudes toward behaviors associated with health outcomes and (2) informs which social groups strongly influence individuals' subjective norms. IBM also provides insight into the lack of cultural relevance of many current interventions which target eating behaviors in African Americans (James, 2004). Interventions and health-messages may have the best uptake when individuals (i.e., African Americans) view the behavior as congruent with their identity (Stephens et al., 2012). The following section delineates how mindsets may be shaped by culture and inform perceived behavioral control.

Implicit Theories (a.k.a Mindsets) of Health

Implicit theories (hereto referred to as mindsets) refer to an individual's lay beliefs regarding the predetermined or malleable nature of particular trait or outcome (Dweck & Leggett, 1988). These beliefs are implicit and often not explicitly articulated (Burnette et al., 2013). Individuals who perceive a behavior or trait as malleable—and thus changeable through hard work—are deemed to have a "growth" mindset in that particular area. In contrast, individuals who view a behavior or trait as predetermined, and therefore not subject to change, are deemed to have a "fixed" mindset. Mindsets are trait-specific; that is, individuals can possess a growth mindset in one area but a fixed mindset in another area (e.g., academics, personality, health). Mindsets are theorized to increase self-efficacy and perceived value of a given behavior (i.e., expectancy-values), increasing overall motivation to engage in the behavior (Thomas et al., 2019).

Mindsets show the greatest influence on behavior when individuals are met with a challenge (i.e., ego-threat, Burnette et al., 2013). Individuals with a growth mindset are more likely to persist in the face of challenges, as compared to individuals who possess a fixed mindset. Given that self-regulation is critical for maintenance of a healthy lifestyle (Teixeira et al., 2012) and that engagement in self-regulation can be challenging at times, recent work has applied mindsets to health behaviors (Burnette, 2010; Orvidas et al., 2020; Schreiber et al.,

2020; Thomas et al., 2019). Specifically, Thomas and colleagues (2019) found that growth (as opposed to fixed) mindsets of health were associated with increased self-efficacy and value of healthy eating (i.e., expectancy-values) as well as greater healthy eating intentions. The association between the growth mindsets and greater healthy eating intentions was further replicated in a study that used an ecological momentary assessment. Schreiber and colleagues (2020) have shown that growth mindsets of health (as opposed to fixed mindsets) assessed at one time point were associated with increased engagement in a healthy diet subsequently.

How does the mindsets literature enable researchers to integrate culture into TPB? Mindsets inform perceived behavioral control of healthy eating. In TPB, perceived behavioral control is conceptualized as the product of internal and external resources to achieve a specific health behavior, and reflect aspects which may be out of an individual's volitional control (Ajzen, 2002). Mindsets act as an internal resource shaping perception of the controllability of behavior. For example, when possessing similar resources and facing similar challenges (i.e. controlling for person characteristics), individuals who possessed a growth mindset were more likely to persist when facing a hypothetical dieting setback than individuals whom possessed a more fixed mindset (Burnette, 2010). In two follow-up studies, individuals with a growth mindset reported more weight loss across two time periods, and exuded more effort to attain a weight loss goal, than individuals who held a fixed mindset (Burnette, 2010). These results demonstrate the critical role of individuals' mindsets in predicting perceived behavioral control.

Additionally, mindsets are likely to be determined by the specific cultural context. Not only does culture inform human emotions and cognition, but it also shapes motivation and goal attainment (Markus & Kitayama, 2010). Culture also provides a "systematic context" for individual development (i.e., socialization) and decision-making (Markus & Kitayama, 2010). Markus and Kitiyama have further stated" *… sociocultural contexts afford cultural practices that become incorporated into behavioral routines of daily life"* (p.427). In other words, culture independently and interactively acts on the situation in which an individual is placed, and the

individual's psychological processes and behavioral responses to a given situation. In the case of health behaviors, culture influences exposure to situations that promote health, psychological processes regarding health (i.e., attitudes, outcome expectances, knowledge, self-efficacy) and subsequent health behaviors. Given that culture shapes psychological processes regarding health, culture may also inform general lay beliefs about the malleability of health outcomes (i.e., health mindsets).

African Americans continue to be diagnosed with obesity and its related comorbidities at disproportionate rates, compared to other ethnic groups (CDC, 2020a). Further, mortality rates from cardiovascular disease, diabetes and cancer are higher for African Americans (*Diabetes and African Americans - The Office of Minority Health*, 2021; *Heart Disease - The Office of Minority Health*, 2021b). Research has extensively documented barriers to healthy eating among African Americans, such as physical and financial access, decreased social support, and time constraints (Anderson Steeves et al., 2016; Barnett & Praetorius, 2015; Baruth et al., 2014; Ghosh-Dastidar et al., 2014; Kershaw et al., 2019; Morland et al., 2002; Sogari et al., 2018). Further, on a societal level, health messages emphasize these stark disparities (Niederdeppe et al., 2013), leading to reactance and—in some cases—decreased engagement in preventative health behaviors (Nicholson et al., 2008). Mindsets are most essential and predictive of outcomes in challenging situations, or ego-threat (Burnette et al., 2013). With numerous intrapersonal, interpersonal, environmental and societal barriers to engagement in healthy eating, it is critical to assess the magnitude by which mindsets may inform healthy eating intentions in African Americans.

For example, Thomas et al. (2019) found that the association between growth mindsets and expectancy-values was stronger for African Americans than other participants, highlighting the potential clinical benefit of mindset interventions particularly for African Americans. However, when experimentally inducing growth mindsets, race did not moderate the effect of growth mindsets on expectancy-values, although growth mindsets did increase healthy eating

intentions for African Americans. These results demonstrate the need for replication studies to not only assess within-group variability among African Americans, but also the need to understand mindsets in conjunction with other salient and culturally-relevant beliefs.

Finally, it is important to note that mindsets are distinct from locus of control, which refers to an individual's belief about whether their health is attributed to personal behavior (i.e., internal health locus of control) or external factors (i.e., external health locus of control; Rotter, 1966). In experimental studies, locus of control has been found to mediate the relationship between mindsets and health attitudes. Specifically, internal locus of control has been associated with healthier food choices in experimental food decision-making tasks. Ajzen (2002) has also noted that self-efficacy and locus of control work in tandem to yield overall perceived behavioral control. Mindsets inform the overall controllability of a behavior and precede loci of control (Dweck & Leggett, 1988; Schreiber et al., 2020), thus highlighting the need to examine the role of mindsets in perceived behavioral control.

Proposed Conceptual Model

This project expands TPB by integrating IBM and mindset theory to understand cultural nuances in salient beliefs (i.e., attitudes toward healthy eating, subjective norms, and perceived behavioral control) shaping healthy eating intentions in African American college students. IBM highlights the crucial role of group identity in the adherence to group norms, such that behavioral engagement is motivated by inclusion in relevant group identities. Thus, IBM informs both attitudes towards the behavior and subjective norms. In addition, mindsets of health, which reflect an individual's perceptions of the lay beliefs of the changeable nature of health, may inform the overall controllability of a behavior, shaping perceived behavioral control.

The original TPB posits that attitudes, subjective norms, and perceived behavioral control are interrelated determinants of intentions, such that each construct has a direct effect on intentions (Figure 2 on p.8). However, I posit that TPB constructs may operate differently among African Americans when considering cultural influence. The proposed conceptual model

reflects the foundational role of culture in healthy eating intentions by depicting subjective norms as the most fundamental factor predicting healthy eating intentions (Figure 3).

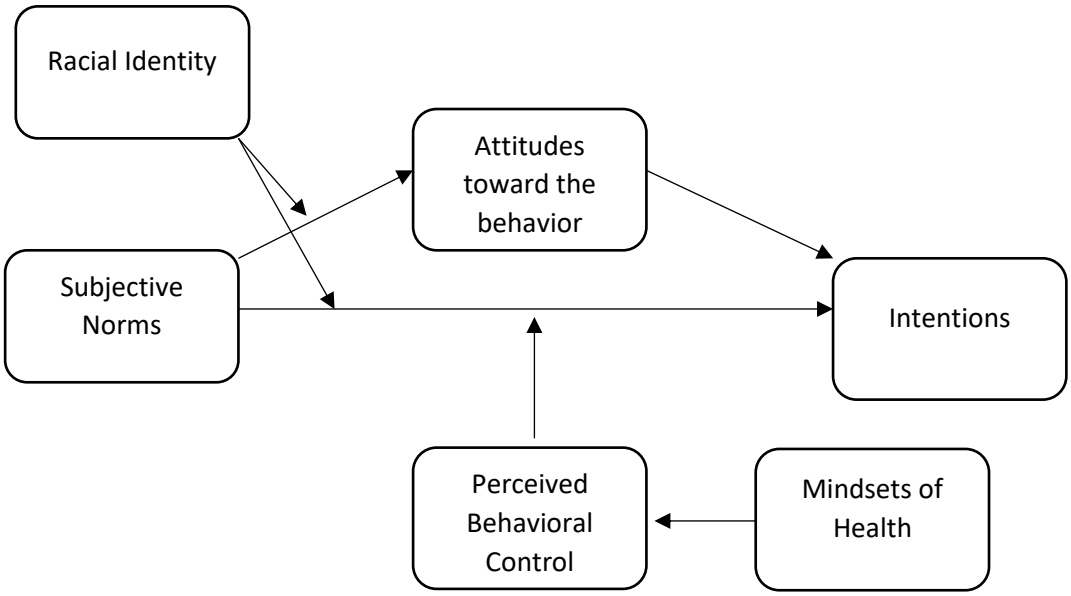


Figure 3. Full Conceptual Model

My expanded model suggests that subjective norms are associated with healthy eating intentions both directly and indirectly. More specifically, when engaging in healthy eating is viewed as culturally congruent (i.e., subjective norms in favor of healthy eating), participants will report increased healthy eating intentions. In contrast, when engaging in healthy eating is viewed as culturally incongruent (i.e., subjective norms against healthy eating), participants will report lower levels of healthy eating intentions.

The model further suggests that this link may be moderated by perceived behavioral control and/or racial identity (i.e., strength of identification to one's racial group). Specifically, it is predicted that the relationship between subjective norms in favor of healthy eating and intentions will be stronger for individuals who report higher levels of perceived behavioral control. In contrast, the association between subjective norms against healthy eating and intentions may not differ between individuals with higher vs. lower levels of perceived behavioral

control. When considering racial identity as a moderator, it is predicted that the positive association between subjective norms in favor of healthy eating and healthy eating intentions would be stronger for individuals with stronger, as opposed to weaker, racial identity. It is also predicted that the negative association between subjective norms against healthy eating and healthy eating intentions would be stronger for individuals with stronger racial identity than those with a weaker racial identity.

The model further suggests an indirect association between subjective norms and healthy eating intentions through attitudes towards healthy diet. Specifically, subjective norms in favor of healthy eating would predict more positive attitudes towards healthy eating, whereas subjective norms against healthy eating would predict more negative attitudes towards healthy eating. Lastly, racial identity is hypothesized to moderate the relationship between subjective norms and attitudes as well as subjective norms and intentions, such that the positive association between subjective norms in favor of healthy eating and attitudes towards health eating as well as the negative association between subjective norms against healthy eating and attitudes towards health eating would be both stronger for individuals with stronger, as opposed to weaker, racial identity.

It should be noted that Black racial identity is a multidimensional construct reflecting the centrality of group belonging to one's identity (i.e., racial centrality), private and public appraisal of one's group attributes, behaviors and beliefs (i.e., private and public regard), and endorsement of ideologies related to one's group status in society (i.e., Assimilationist, Humanist, Nationalist, and Oppressed Minority; Sellers et al., 1997). In the specific context of health promotion behaviors, Harvey and Afful (2011) found that racial typicality was associated with greater importance and engagement in health promotion behaviors among non-collegiate African American young adults. Specifically, results indicated that the more a health promotion behavior was perceived as typical of African Americans, the more likely it was considered important and more frequently engaged. The converse was also found, such that viewing

health-compromising behaviors as typical of African Americans was associated with increased importance and more behavioral engagement in health-compromising behaviors. Moreover, nationalist ideology (i.e., ideology endorsing the importance and uniqueness of being Black) moderated the association between racial typicality and engagement in health-promotion behaviors, such that participants who strongly endorse the nationalist ideology were more likely (than those who weakly endorse this ideology) to engage in health-compromising behaviors when those behaviors were viewed as more typical of African Americans. Researchers also found that perceived importance of the behavior mediated the link between racial typicality and engagement in health promotion behaviors, suggesting that viewing a behavior as typical of one's group shapes a behavior's importance, subsequently influencing behavioral engagement (Harvey & Afful, 2011). Therefore, the proposed research will focus on racial centrality and nationalist ideology as potential moderators.

The Present Study

Today, in an era of pervasive racial disparities in obesity and its comorbidities, aspects of African American culture (e.g., food preferences) are viewed as barriers to engagement in health promotion behaviors (Swierad et al., 2017). However, this approach leads to a fragmented and deficit-based conclusion about the influence of African American culture on health promotion behaviors, including healthy eating. What remains to be empirically studied is how African American culture shapes collective attitudes and norms regarding eating behaviors for African Americans and its clinical implications for engagement in health-promoting diets, perceptions of health-related messages and uptake of obesity-related interventions. Further, there is a nascent body of research examining the influence of mindsets of health on intentions and overall behavior, but no studies have assessed the role of mindsets of health on the relationship between perceived behavioral control and behavioral intentions in African Americans college students. Thus, to fill the critical knowledge gap and explore potential future intervention points, this project seeks to answer the following research question: *What are the*

roles of cultural congruence and mindsets of health on healthy eating intentions among African American college students?

The overarching goal of the present research is to assess the roles of culturally-informed subjective norms, attitudes, and perceived behavioral control in healthy eating intentions among African American college students. Two studies will be conducted concurrently to achieve this overarching goal. Study 1 aims to assess the associative strength of culturally congruent attitudes, subjective norms, and perceived behavioral control and healthy eating intentions among African American college students. Study 2 tests the causal effects of subjective norms and mindsets on healthy eating intentions.

This project advances the literature on TPB and healthy eating intentions of African American college students by placing an unprecedented focus on the role of culture by integrating the IBM theory and the mindsets theory into one theoretical model. Findings from this project will allow researchers to determine the nature of the effect of cultural congruence and mindsets on healthy eating intentions (i.e., additive vs interactive), which can have clinical implications for intervention development and tailoring by identifying which psychosocial factor (i.e., cultural congruence or mindsets) is more malleable to change. Findings from this study will also statistically model the extent to which culture informs specific attitudes and beliefs which are more proximal to health outcomes.

Study 1 Methods

Study 1 tested the aforementioned hypotheses based on the new conceptual model and identified factors that predict healthy eating intentions among African American college students. Specifically, Study 1 employed a cross-sectional survey and sought to assess the relations among culturally-informed subjective norms, racial identity, attitudes towards healthy eating, perceived behavioral control, and healthy eating intentions among a sample of 81

African American college students. Findings from this study can be used to refine the conceptual model, which will be tested in a larger sample size in future studies.

Participants

Eligible participants: 1) were at least 18 years of age, 2) self-identified as Black/African-American, 3) were currently enrolled as an undergraduate student, 4) displayed no eating disorder symptomology and 5) did not participate in Study 2. Sample size was computed using the direct path between subjective norms and healthy eating intentions moderated by racial identity and perceived behavioral control, because this path included more predictors than the indirect path (i.e., between subjective norms and healthy eating intentions through attitudes). A power analysis using G*Power 3.1 (Faul et al., 2009) indicated that a minimum sample size of 170 complete cases was sufficient to detect a small-to-medium effect (f^2 = .12) with 15 predictors and power = .80.

A total of 390 students were screened, and 67.4% (n = 263) of participants were deemed ineligible due to clinical threshold symptomology for anorexia, bulimia, and/or binge eating-spectrum disorder. Another 46 participants were excluded because they either did not complete the entire survey (n = 42) or did not meet the education-level criterion (n = 4), yielding 81 analyzable cases.

Procedure

For students whom were recruited via VCU's online research participant pool (SONA), study advertisements were posted on the SONA Portal. For students whom were recruited outside of SONA, study advertisements were submitted to school-wide communication platforms (e.g., VCU TelegRAM) bimonthly (on average), as well as digital monitors in frequently trafficked student spaces (e.g., University Commons and Student Gym). Digital advertisements ran from November to December 2022. Email solicitations were sent to

professors in Departments of Psychology and African American studies and predominantly African American student organizations. Students were also recruited via group text-messaging apps (e.g., GroupMe) by posting IRB approved text in student-led group chats (e.g., VCU Class of 2024).

All interested students were directed to Qualtrics Online Survey platform (Qualtrics, Provo, UT), where they completed an online screener to confirm eligibility criteria (e.g., age, race, eating disorder symptomology). Eligible participants were directed to the online consent form, which detailed the study topic, purpose, and measures as well as data confidentiality and privacy. After reading the consent form, eligible participants self-enrolled in the study. Average study completion time was ~20 minutes. Upon completion, SONA participants were automatically granted .50 research credits. Students who completed the study outside of SONA were entered into a raffle to receive 1 of 66, $15 Amazon e-gift cards.

Measures

Outcome Variable

Healthy Eating Intentions. Healthy Eating intentions were captured using two items adopted from the Dieting Intentions Scale (Cruwys et al., 2013). Only the first two items were included in the present study, as the remaining scale taps into attitudes towards behavior change, which would have confounded the measure of "Attitudes towards the Behavior"—a predictor of intentions. Example items include: *"In the next two weeks, I intend to change my eating behaviors*" and "*In the next two weeks, I intend to consume more healthy foods.*" Ajzen (2001) recommends that researchers clearly specify a time frame of the intended behavior. In prior research among college students, the qualifying time duration has been 1-2 weeks (Blanchard et al., 2008; Blanchard et al., 2009; Blanchard et al., 2009; Thompson et al., 2020). In a sample of African American adults, this adopted measure yielded good internal reliability (α

= .86). In addition to these broader indications of intentions, participants also rated their intentions to reduce consumption of less nutritious foods (i.e., snacks, desserts/candies, processed foods and sugar-sweetened beverages) and increase consumption of more nutritious foods (i.e., foods high in good fat, healthy snacks, fruits, vegetables, and water). Example items included: "*In the next two weeks, I intend to reduce my consumption of* [insert food item]" and "*In the next two weeks, I intend to increase my consumption of* [insert food item]". These particular items were developed for the purpose of this study. Participants rated their agreement with each statement on a 7-point Likert Scale ranging from 1 (strongly disagree) to 7(strongly agree). Total scores were computed by calculating the sum across all items. Higher scores indicated more healthy eating intentions. In the current sample, internal reliability was strong (α =.92).

Predictor Variables

Attitudes towards healthy eating. Attitudes towards healthy eating was assessed using 4-items adapted from Blanchard et al. (2009). Two items captured affective attitudes towards healthy eating (e.g., enjoyable or unenjoyable). Both items began with the same clause, *"During the next 2 weeks, it will be* [insert attitude] *to consume healthy foods*". In a sample of college students, these items yielded adequate internal reliability (α = .69). To further differentiate affect towards healthy eating, the 10-item International Positive and Negative Affect Short form (I-PANAS-SF; Thompson, 2007) was adopted to gauge how participants felt about engaging in healthy eating. Sample items include, "*When thinking of engaging in healthy eating, I feel inspired"* or "*When I think about engaging in healthy eating, I feel nervous".* Participants rated their affect on a 5-point Likert scale of 1 (Very slightly or not at all) to 5 (Extremely). Scores across the positive and negative affect scales were totaled, with higher scores indicating greater positive or negative affect, respectively. In a diverse sample of adults, this measure

yielded good reliability (α =.78 [positive], and α =.76 [negative]). In the current sample, internal reliability was strong for positive (α = .93) and negative affect (α = .89).

Instrumental attitudes were assessed via ten items, and explored the physical, mental, spiritual, financial, and social benefits of engaging in healthy eating. Examples include: *"During the next 2 weeks, it will be physically beneficial to consume healthy foods*" and "*During the next two weeks, it will be socially beneficial for maintaining positive relationships with African American friends to consume healthy foods.*" These items were developed for the present study, as prior research has not delineated non-physical benefits of engagement in healthy eating, which may be particularly important to African Americans. Participants rated their agreement with each item on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Affective and Instrumental attitudes were treated as subscales and item scores were averaged for each subscale. Higher numbers indicated more positive attitudes towards healthy eating. In the current sample, internal reliability was acceptable (α = .86).

Subjective Norms. The degree to which healthy eating is considered culturally congruent (vs. incongruent) was measured via subjective norms. For the purposes of this study, two measures of descriptive subjective norms were comprised of four scales. The Healthy Behavior is African American Scale (α = .69, Oyserman et al., 2007) was comprised of four items and was designed to assess the extent to which particular health promotion behaviors are considered typical of African Americans. Each item started with a similar clause, *"How Black is it to* [insert behavior]". The measure captured the following health promotion behaviors: a) eat foods that are high in "good fat", b) eat healthy snacks, c) eat fresh fruits, d) eat fresh vegetables, d) drink water. Conversely, the Unhealthy Behavior is African American scale (α = .71) assessed the extent to which health-compromising behaviors are considered typical of African Americans. This scale was identical to the "Healthy Behavior is African American scale" in item phrasing, however, the behaviors of interest varied. Relevant to the present study's focus, the health-

compromising behaviors of interest were a) eat salty snacks, b) eat sugary desserts or candies, c) eat foods that are processed, and d) drink beverages that are high in sugar. For both scales, participants indicated their response on a 5-point Likert scale ranging from 1 (Not Black at All) to 5 (Very Black). The nine-item Unhealthy Food Perceptions Subscale from the Culturally-Based Communication and Health, Eating and Food (CHEF) Scale (α = .90, Hubbard et al., 2016) was used to assess an individual's perception that others consider their cultural foods unhealthy. The CHEF scale was designed on a multi-ethnic sample; thus, the items reflect more general conceptualizations of culture. To best reflect the focus of the present study, items were adapted to centralize Black culture. Example items include: *"Food that are representative of Black culture are not healthy"* and *"Healthy foods are not representative in Black culture's foods"*. Participants rated their agreement with each statement on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The six-item Healthy Foods Perceptions Subscale of the CHEF Scale (α =.85; Hubbard et al., 2016) measured the extent to which one's cultural foods are perceived as healthy. Example items included: *"The foods my health care provider recommends are representative of Black culture"* and "*The foods representative of Black culture are advertised as healthy."* Participants rated their agreement with each statement on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Cultural congruence was a composite score (i.e., mean) of scores for the "Healthy behavior is African American scale" and "Healthy food perceptions subscale". Scores for cultural congruence yielded strong internal consistency (α = .83). Cultural incongruence was computed by averaging scores for the "Unhealthy behavior is African American scale" and "Unhealthy food perceptions subscale". Scores yielded strong internal reliability (α = .91).

Injunctive norms regarding healthy eating (i.e., whether important others think I should engage in the behavior of interest) were assessed with a 10-item measure developed for the proposed study. Specifically, participants will report on whether relevant others approve of them

engaging in health-promoting behaviors (10 items). Example items include: "*My family members approve of me consuming foods that are high in "good fat" (unsaturated fats), such as avocados, walnuts, and salmon"* and *"My Black/African American friends approve of me consuming fresh fruits."* Scores were averaged to indicate overall engagement of approval of relevant others. Higher scores indicated greater approval of engagement in healthy eating by relevant others (α = .93).

Perceived Behavioral Control. Perceived behavioral control was measured using 6 items adopted from Conner et al. (2002). The items measured the perceived self-efficacy and controllability over engagement in healthy eating. Example items included: "*I am confident that if I ate a healthy diet, I could maintain it,* and "*Whether I do or do not eat a healthy diet is entirely up to me."* Participants responded on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree), 1 (no control) to 7 (complete control), and 1 (difficult) to 7 (easy). The mean across items was computed to reflect overall perceived behavioral control. Higher scores indicate greater perceived behavioral control. In a sample of adults, this measure yielded good internal reliability (α = .73; Conner et al., 2002). In the current sample, internal consistency was strong (α = .80).

Mindsets of Health. Mindsets of health was measured via the six-item implicit theories of health scale (α = .89, Schreiber et al., 2020). Example items included: "*No matter who you are, you can significantly change your health"*, and "*To be honest, you cannot really change how healthy you are* (reverse-coded)*."* Participants rated their agreement with each statement on a 7-point Likert Scale ranging from 1 (strongly disagree) to 7(strongly agree). Higher scores indicated the presence of higher levels of a growth mindset of health (α = .76).

Moderator Variable

Ethnic Racial Identity. The centrality and ideology scales of the Multidimensional Inventory of Black Identity (MIBI; Sellers et al., 1997) was used to assess ethnic racial identity (α = .77). The MIBI has shown to be predictive of race-relevant activities (e.g., having African American friends, enrolling in Black history courses). This 8-item centrality subscale measures the degree to which being African American is a central part of the individual's identity. Example items included, "*Overall, being Black has very little to do with how I feel about myself*" (reverse-coded) and "*My destiny is tied to the destiny of other Black people*." Greater levels of racial centrality have been found to be associated with less engagement in interracial interaction (r = .39, $p < .01$). In the current sample, internal consistency was strong (α = .80).

Secondly, the 9-item nationalist subscale assesses the degree to which participants endorse distinguishing Blackness from other ethnic groups (α = .70). Example items included: *"It is important for Black people to surround their children with Black art, music, and literature" and "Whenever possible, Blacks should buy from other Black businesses."* For each subscale, participants reported their agreement with each statement on a 7-point Likert scale, ranging from 1 (strongly disagree) to 7(strongly agree). In the current study, internal reliability was strong (α= .80) Higher scores indicated a greater racial centrality and nationalist ideology, respectively.

Control Variables

Demographics. To assess demographics, the following indicators were captured: age, ethnicity, gender, parental education and income level, current financial status, residency status, year in school, and self-reported height and weight.

Past Eating Habits. To account for individual variability in past eating habits, eating behaviors during the past week were assessed using a modified version of the nutrition section

of the Behavioral Risk Factor Surveillance System (BRFSS; Center For Disease Control and Prevention, 2019). The BRFSS is an annual, national data collection program which captures health-related behaviors, chronic disease prevalence, and preventative health behaviors among US adults (ages ≥ 18 years). Participants reported how often (inputting a numerical value) they consume a particular food item per week over the past 30 days. Specifically, the item states, *"During the past 30 days, how often did you 1) consume fruits- not including fruit juice, 2) eat green, leafy salad, 3) eat sweet potatoes or boiled/mashed potatoes, 4) eat other vegetables.* Items were totaled to indicate consumption of fruits and vegetables during the 30 days. This method was adopted from a previous study which assessed TPB among college students (Blanchard, et al., 2009). Scores were averages across items, with higher scores indicate greater consumption of fruits and vegetables. In the current study, internal consistency was adequate (α = .64).

Eating Disorder Symptomology. Given that eating disorders (e.g., binge-eating) have been shown to co-occur with obesity and increase the risk of obesity onset and severity (da Luz et al., 2018), eating disorders are considered an exclusion criteria, so that the current hypotheses can be tested in a relatively homogenous sample. The Eating Disorder Diagnostic Scale (EDDS) is an effective diagnostic tool for three major eating disorders: anorexia nervosa, bulimia, and binge eating disorder (Stice et al., 2000). Anorexia Nervosa is indicated by a BMI < 17.5, and an overall score greater than or equal to 11 (on items 2,3,4, and 21). Example items include: "*Over the past 3 months, have you had a definite fear that you might gain weight or become fat?" and "Has your shape influenced how you think about (judge) yourself as a person?"* Bulimia is indicated by a score of greater or equal value to 16 on items 3-6, 8 and 15-18. For example, "*How many times per week on average over the past 3 months have you eaten an unusually large amount of food and experienced a loss of control?"* Lastly, binge-eating disorder is diagnosed with scores of greater or equal value to 8 on items 5-7, and items 9

-18. For example, *"During these episodes of overeating and loss of control, did you feel very upset about your uncontrollable overeating or resulting weight gain?"*. Items were totaled, with higher scores indicate greater eating disorder symptomology. The measure has yielded good reliability (α=.91) in a sample of adults.

Analysis Plan

Prior to analysis data were screened for missingness. A non-significant *Little MCAR's* test indicated that data was missing at random, $\chi^2(22) = 31.04$, $p = .10$. Listwise deletion was used in the case of random missingness. Assumptions of univariate and multivariate normality, linearity, and normality of error were assessed and met. A zero-order correlation was conducted to assess bivariate relationships and identify potential covariates (e.g., BMI, parent SES, student income level, past healthy eating behaviors). The linearity among the predictor variables was assessed via a simultaneous regression and visual assessment of residual plots prior to main analyses.

A zero-order correlation was conducted to assess bivariate relationship and identify potential covariates (e.g., BMI, parent SES, student income level, past healthy eating behaviors). The linearity among the predictor variables was assessed via a simultaneous regression and visual assessment of residual plots prior to main analyses. Following visual assessment of linearity, two sets of analyses were conducted.

To assess hypothesis 1, which examined the role of racial centrality and perceived behavioral control as moderators of the relationship between culturally-relevant subjective norms (i.e., cultural congruence, cultural incongruence, and injunctive norms) and healthy eating intentions, two sets of analyses were conducted. Because the minimum sample size (N=170) was not achieved, three separate analyses were conducted for each subjective norm predictor (healthy eating is culturally congruent, healthy eating is culturally incongruent, and

healthy eating is approved by relevant others [i.e., injunctive norms]). Each analysis was conducted using Hayes PROCESS macro (Model 2) with 5,000 bootstrapped resamples (Hayes, 2018). Gender, BMI, and past eating habits were entered into the model as covariates.

To examine the indirect association of culturally-relevant subjective norms on healthy eating intentions through attitudes, further moderated by racial centrality or nationalist ideology, a moderated mediation, which generated 5,000 bootstrapped samples was conducted using Hayes PROCESS macro (Model 7). A Bonferroni correction was applied to address family-wise error ($p < .008$). All mediators (i.e., instrumental attitudes, positive affect, and negative affect) were entered into the model simultaneously.

For Hypothesis 2, we expected that when subjective norms were more favorable of healthy eating, participants would report more positive attitudes towards healthy eating, however, this association would be stronger for participants who report a stronger (as opposed to a weaker) racial identity. Further, we expected that less favorable subjective norms would be associated with more negative attitudes towards healthy eating. This relationship would be stronger for individuals who report a stronger racial identity. To test this hypothesis, six separate analyses were conducted, one with each subjective norm indicator. Each of these three models will be assessed with racial centrality and nationalist ideology as moderators.

As discussed earlier, factors associated with healthy eating intentions were entered into the models as covariates. Categorical variables, such as gender, were dummy-coded before being entered into the model. Continuous variables included in the model will be grand-mean centered.

Study 1 Results

Demographics

Participants, on average, were approximately 20 years of age (age *M* = 19.81, *SD* = 3.37), first-year students (50.6%), and identified as female (74%). Participants generally agreed that their parents/caregivers were financially able to be selective in the types of food purchased for their household while growing up (*M* = 3.96, *SD* =1.0). In addition, the majority of participants did not recall being enrolled in federal assistance programs during childhood (e.g., SNAP, WIC; 55.4%), experienced food security (i.e., had access to at least 3 meals per day; 94%), and lived in a home owned by their parents/caregivers (56.6%). At present day, participants indicated an ability to be selective about what they consume (*M* = 3.53*, SD* = 1.07*),* and most were not enrolled in federal assistance programs (76.1%). Over half of participants were enrolled in a meal plan on campus (59%). On average, BMI was within the "healthy" range (*M* = 24.66, *SD* = 5.91), and participants consumed fruits and/or veggies about 15 times (or every other day; *M* = 14.96, *SD* = 13.75) over the past 30 days. The summary of participant characteristics is provided in Table 2.

Descriptive Statistics

Participants strongly endorsed intentions to eat healthy in the next two weeks (*M* = 71.31*, SD* = 15.96*)*. On average, participants scored above the midpoint of the scale, (*M* = 3.08, *SD* = .54), indicating that they agreed that healthy eating is considered culturally congruent with the Black identity. However, participants also agreed that healthy eating was considered culturally incongruent with the Black identity, which was reflected in the group mean being higher than the midpoint of the scale (*M* = 3.27*, SD* = .74). Injunctive norms for healthy eating were highly endorsed, such that there was strong support by relevant others for participants to engage in healthy eating (*M* = 4.47, *SD* = .62).

Generally, participants agreed that health is changeable (*M* = 5.65, *SD* =.87). Healthy eating was perceived as beneficial socially, financially, relationally, physically, and emotionally (*M* = 3.43*, SD* = .68*).* Positive affect towards engaging in a healthy diet was generally high (*M* = 16.26*, SD* = 5.42), whereas negative affect towards healthy eating was relatively low (*M* = 6.77*, SD* = 3.33). Being Black was highly central to the identity of participants in this study (*M* = 4.97, *SD* = 1.08). Further, the need to distinguish Blackness from other ethnic groups was strongly endorsed (*M* = 4.33, *SD* = .97). Lastly, participants agreed that they have control or agency over their ability to engage in a healthy diet (*M* = 5.29*, SD* = .97). Table 3 provides the summary of descriptive statistics.

Preliminary Analyses

Bivariate and point biserial correlations are displayed in Table 3. BMI was positively associated with the outcome variables of interest (i.e., intentions, *r* = .32*, p* = .004) and a predictor variable (i.e., positive affect; *r* = .23*, p* = .04). Past eating habits was also positively associated with positive affect (*r* = .40*, p* < *.001*). Thus, BMI and past eating habits were entered as covariates in all analyses.

Main Analyses

Hypothesis 1: The Direct Association between Culturally-Relevant Subjective Norms and Healthy Eating Intentions

Cultural Congruence as a Predictor*.* Results from the first model with racial centrality as a moderator of the association between perceived cultural congruence and healthy eating intentions indicated that neither cultural congruence (β = -.05, *SE* = 3.03, *p* = .99) nor racial centrality (β = 2.36, *SE* = 1.53, *p* = .12) predicted healthy eating intentions. However, perceived behavioral control was significantly associated with healthy eating intentions (β = 5.56, *SE* = 1.67, *p* =.001). Specifically, participants who reported higher, as opposed to lower, levels of

perceived control over healthy eating were also more likely to report greater intentions to eat healthy in the next two weeks. Further, inconsistent with my prediction, there was no evidence to suggest that the relationship between cultural congruence and healthy eating intentions is moderated by racial centrality (β = -3.02, *SE* = 2.89, ΔR^2= .01, *F*(1,73) = 1.10, *MSE* = 199.86, *p* =.30, 95% CI [-8.78, 2.73]) or perceived behavioral control (β = -.78, *SE* = 4.09, ΔR^2= .0004, *F*(1,73) = .04, *MSE* = 199.85, *p* =.85, 95% CI [-8.93, 7.36]) in the current sample.

The second model with nationalist Ideology as a moderator revealed similar results. Specifically, while neither cultural congruence (β = -.83, *SE* = 3.07, *p* = .79) nor nationalist ideology predicted healthy eating intentions (β = -.92, *SE* = 1.78, ΔR^2= .00, *F* (1,73) = .023, *MSE* = 208.17, *p* =.60, 95% CI [-4.48, 2.63]), perceived behavioral control was significantly associated with healthy eating intentions (β = 5.51, *SE* = 1.71, *p* =.002). Lastly, there were no conditional effects of nationalist ideology (β =.15, *SE* = 3.12, ΔR^2= .00, *F* (1,73) = .003, *MSE* = 208.17, *p* =.96, 95% CI [-6.07, 6.37]) or perceived behavioral control (β =.67, *SE* = 3.90, ΔR^2= .00, *F* (1,73) = .03, *MSE* = 208.17, *p* =.86, 95% CI [-7.10, 8.45]) on the relationship between cultural congruence and healthy eating intentions.

Cultural Incongruence as a Predictor. The first analysis revealed that cultural incongruence nor racial centrality predicted changes in healthy eating intentions (β =1.67, *SE* = 2.29, *p* =.46 and β =1.09, *SE* = 1.61, *p* =.50, respectively). Again, perceived behavioral control was significantly associated changes in healthy eating intentions (β = 6.00, *SE* = 1.73, *p* =.001). Unlike the prediction, the relationship between cultural incongruence and intentions was not moderated by either racial centrality (β = 3.20, *SE* = 2.99, ΔR^2= .01, *F* (1,73) =1.15, *MSE* = 191.71, *p* =.29, 95% CI [-2.76, 9.17]) or perceived behavioral control (β = -4.54, *SE* = 3.00, ΔR^2= .02, *F* (1,73) = 2.29, *MSE* = 191.71, *p* =.13, 95% CI [-10.52, 1.44]).

The second analysis revealed that while neither cultural incongruence (β = 2.81, *SE* = 2.08, *p* =.18) nor nationalist ideology (β = -1.80, *SE* = 1.65, *p* =.28) were significantly associated

with healthy eating intentions, perceived behavioral control did predict healthy eating intentions (β = 6.33, *SE* = 1.58, *p* <.001). However, different results were found when examining nationalist ideology as a moderator. Specifically, partially in line with our hypothesis, the relationship between cultural incongruence and healthy eating intentions was significantly moderated by nationalist ideology, β = 7.35, *SE* = 2.53, ΔR^2= .07, *F*(1,73) = 8.44, *MSE*= 173.34, *p* =.005, 95% CI [2.31, 12.39], accounting for 7% of the variance in healthy eating intentions. Among participants with a strong nationalist ideology (i.e., 1 *SD* above mean), greater perceptions of cultural incongruence of healthy eating was associated with significantly more healthy eating intentions (β = 9.96, *SE* = 3.16, *p* = .002). Among individuals with a weaker nationalist ideology, the simple slope of cultural incongruence was not associated with healthy eating intentions (β = -4.33, *SE* = 3.28, *p* = .19). Lastly, the relationship between cultural incongruence and healthy eating intentions was not moderated by perceived behavioral control as predicted (β = -6.27, *SE* = .25, ΔR^2= .05, *F* (1,73) = 5.41, *MSE*= 173.34, *p* =.02, 95% CI [-11.64, -.89]).

Injunctive Norms as a Predictor*.* Injunctive norms (β = 5.30, *SE* = 3.15, *p* =.10), racial centrality (β = 1.61, *SE* = 1.54, *p* =.30), nor perceived behavioral control (β = 2.87, *SE* = 1.82, *p* =.12) predicted healthy eating intentions. There were no conditional effects of racial centrality on the relationship between injunctive norms and healthy eating intentions (β = -4.71, *SE* = 2.37*,* ΔR^2=.03, *F* (1,73) = 3.95, *MSE* = 179.62, *p* =.05, 95% CI [-9.45, .01]). Finally, perceived behavioral control did not moderate the association between injunctive norms and healthy eating intentions (β=.58, *SE* = 2.6, ΔR^2= .00, *F* (1,73) = .05, *MSE*= 179.62, *p* =.82, 95% CI [-4.59, 5.75]).

Turning to nationalist ideology as a moderator, injunctive norms did not predict healthy eating intentions (β =6.38, *SE* = 3.32, *p* = .05). In this model, nationalist ideology (β = -1.06, *SE* = 1.83, *p* = .56) nor perceived behavioral control (β = 3.34, *SE* = 1.83, *p* = .07) were significant predictors of healthy eating intentions. Further, nationalist ideology (β = -2.72, *SE* = 3.33*,*

ΔR^2=.006, *F* (1,73) = .67, *MSE* = 187.28*, p* =.41, 95% CI [-9.37, 3.92]) nor perceived behavioral control (β = -.76, *SE* = 2.52*,* ΔR^2=.001, *F* (1,73) = .09, *MSE* = 187.28, *p* =.76, 95% CI [-5.79, 4.27]) moderated the association between injunctive norms and healthy eating intentions.

Hypothesis 2: The indirect effect of culturally-relevant subjective norms on healthy eating intentions through attitudes

Cultural Congruence as a Predictor. Hayes PROCESS macro (Model 7) revealed that there was no direct effect of cultural congruence on healthy eating intentions, β = -2.89, *SE* = 2.73, *p* = .29, 95% CI [-8.34, 2.56]. Further, results with racial centrality as a moderator revealed no conditional indirect effects of cultural congruence on healthy eating intentions through instrumental attitudes (β = .01, *SE* =.64, 95% CI [-.99, 1.19]), positive affect (β = -1.54, *SE* =2.33, 95% CI [-4.60, 4.62]), or negative affect (β = .25, *SE* =.62, 95% CI [-.49, 1.99]).

Similar results were found when nationalist ideology was entered as a moderator. Results indicated no significant direct effects of cultural congruence on healthy eating intentions (β = -2.89, *SE* = 2.73, *p* = .29, 95% CI [-8.34, 2.56]). Additionally, there were no conditional indirect effects of cultural congruence on healthy eating intentions through instrumental attitudes (β = -.11, *SE* =.53, 95% CI [-1.19, 1.17]), positive affect (β = -2.99, *SE* =1.94, 95% CI [-6.58, 1.20]), or negative affect (β = -.33, *SE* =.47, 95% CI [-.46, 1.47]). Taken together, there was no evidence to suggest that there was a moderated mediation through those proposed variables.

Cultural Incongruence as a Predictor. Results indicated no direct effects of cultural incongruence on healthy eating intentions, β = -.63, *SE* =1.93, *p* = .75, 95% CI [-4.48, 3.22]. Contrary to our hypothesis, results with racial centrality as a moderator revealed no conditional indirect effects of cultural incongruence on healthy eating intentions through instrumental

attitudes (β = -.22, *SE* =.70, 95% CI [-1.63, 1.31]), positive affect (β = -1.56, *SE* = 2.05, 95% CI [-4.63, 3.40]) or negative affect (β = -.68, *SE* =.71, 95% CI [-2.59, .09]).

When examining nationalist ideology as a moderator, similar results were found. There were no direct effects of cultural incongruence on healthy eating intentions, β = -.63, *SE* =1.93, *p* = .75, 95% CI [-4.48, 3.22]. In addition, there were no conditional indirect effects of cultural incongruence on healthy eating intentions through instrumental attitudes (β = -.11, *SE* =.44, 95% CI [-.90, .96]), positive affect (β = -.02, *SE* =1.95, 95% CI [-3.59, 4.11]), or negative affect (β = -.19, *SE* =.46, 95% CI [-1.34, .45]). In sum, these results suggest no moderated-mediating effect on the association between cultural incongruence and healthy eating intentions, in this sample.

Injunctive Norms as a Predictor*.* Injunctive norms were significantly associated with changes in healthy eating intentions, such that greater perceptions of approval from others was linked with greater motivation to consume a healthy diet in the next 2 weeks (β = 7.03, *SE* = 2.50, *p* =.006, 95% CI [2.03,12.01]). However, with racial centrality as a moderator there were no conditional indirect effects of injunctive norms on healthy eating intentions through instrumental attitudes (β = -.24, *SE* =.65, 95% CI [-1.88, .78]), positive affect (β = -2.40, *SE* =2.04, 95% CI [-7.30, .58]), or negative affect (β = -.10, *SE* =.48, 95% CI [-1.37, .58]).

When examining nationalist ideology as a moderator, injunctive norms remained a significant predictor of healthy eating intentions, β = 7.03, *SE* = 2.50, *p* =.006, 95% CI [2.03,12.01]. Similar to racial centrality, there were no conditional indirect effects of injunctive norms on healthy eating intentions through instrumental attitudes (β = -.11, *SE* =.51, 95% CI [-1.53, .54]), positive affect (β = .27, *SE* = 2.27, 95% CI [-5.37, 3.84]), or negative affect (β = -.10, *SE* =.50, 95% CI [-1.31, .82]). While there was no indication of moderated-mediating effects, results suggest that perceived approval from relevant others (e.g., family, friends) is a significant factor in shaping behavioral intentions and motivation to engage in a healthy diet.

Study 1 Discussion

The goal of this study was two-fold. First, we explored the direct effect of culturally-relevant subjective norms (i.e., cultural congruence, cultural incongruence, and injunctive norms) on healthy eating intentions and the moderating role of racial identity (i.e., racial centrality and nationalist ideology). We hypothesized that greater perceptions of cultural congruence would be associated with greater healthy eating intentions, especially when racial identity was strong. We also predicted that greater perceptions of cultural incongruence would be associated with less healthy eating intentions, especially for participants with a strong racial identity. Secondly, we explored the indirect effect of culturally-relevant subjective norms on healthy eating intentions through instrumental and affective attitudes (i.e., positive and negative). We predicted that attitudes would mediate the relationship between culturally-relevant subjective norms and healthy eating intentions, which would be further moderated by racial identity. Results partially supported our hypotheses.

First, the current results did not support a direct effect of cultural (in)congruence on healthy eating intentions. This finding is inconsistent with prior research that has shown that African Americans engage in behaviors that are aligned with their racial identity. For example, Harvey and Afful (2011) found that Black emerging adults endorsed engagement in health-promoting behaviors to a greater degree when those behaviors were viewed as typical of their racial group because “ascription” of Blackness to a health-promoting behavior engendered more value.

One potential reason for the current null finding may be that racial identity was simply measured, as opposed to being primed as was in Oyserman et al. (2007). More specifically, in the previous study, racial identity was primed by having participants generate either three or ten similarities between Black and White people. Participants in the three-similarity condition had less difficulty in finding similarities, whereas those in the ten-similarity condition had far greater

difficulty. The strain of generating a longer list of similarities between Black and White people was theorized to lead participants to ruminate on the differences between Black and White people, thus situating participants' cognition on the oppositional nature of the Black identity in comparison to the White identity. In other words, in the previous study, participants were made keenly aware of the differences between Black and White first and then were asked to complete measures assessing the relation of the Black identity to the behavior of healthy eating (i.e., cultural congruence). In contrast, in the current study, some participants were more attuned to the differences between Black and White people than others. Thus, when aggregated, this likely resulted in a neutral perspective of the relation of Black to White people, leading to null findings of cultural (in)congruence and healthy eating intentions.

Contrary to our hypothesis, we found that participants with a strong racial identity reported greater healthy eating intentions when perceived cultural incongruence was *high.* This finding is also inconsistent with prior research applying identity-based model of behavior (Chatzisarantis et al., 2009; Harvey & Afful, 2011; Hogg & Reid, 2006). For example, in one study, African American college students reported less utility of healthy eating, when healthy eating was viewed as culturally incongruent (Oyserman et al., 2007). These results suggest that perceptions of cultural incongruence may reduce the importance of this health behavior. Moreover, cultural incongruence has been associated with less engagement in health-promoting behaviors when nationalist ideology is *strong* (Harvey & Afful, 2011). This conditional effect of nationalist ideology on the relationship between cultural incongruence and engagement in health-promoting behaviors is in direct opposition to the results in the present study.

This opposite effect may be due to contextual factors such as the current racial climate and participant demographics. Data collection for the present study occurred a decade after the previous study conducted by Harvey and Afful (2011). The current racial climate starkly contrasts to that of the early 2000s, in which some stated that we were living in a color-blind,

“post-racial society,” where race no longer served as a barrier to gaining access to resources (Bonilla-Silva, 2015; National Public Radio, 2010). In the height of the COVID-19 pandemic, egregious anti-Black injustices (e.g., murder of George Floyd) ignited the most concerted racial justice movement, since the Civil Rights Era (Morris, 2021). Led by the Black community and supported by non-Black allies, this movement fueled antiracist civic engagement across sectors in the form of protests, difficult discourse, and strategic economic disinvestment and reinvestment. Since then, historical underpinnings of food, housing, wealth, and land injustices have permeated mainstream media. For these reasons, the current racial climate and sociopolitical context may engender greater sensitivity to claims that distinguish and denigrate the behaviors of African Americans from that of other groups. Moreover, the effects of the current racial climate may have been especially felt by individuals with a stronger nationalist ideology, who have historically pioneered racial justice movements. In this study, participants with a stronger nationalist ideology could have been more vigilant to claims that negatively distinguish the health behaviors of African Americans from those of other racial-ethnic groups. This vigilance could have informed the conditional effect of racial identity on the relationship between cultural incongruence and healthy eating intentions.

Secondly, Harvey and Afful (2011) recruited non-collegiate African Americans, of which only a portion (41%) had some level of college education. College affords the opportunity to gain intellectual understanding of theories and structures that inform the human experience. Given that participants in the current study were all college students, they may have had greater intellectual understanding of structural forces that inform cultural (in)congruence of behaviors. This knowledge of the structural factors (e.g., racism, environmental access and barriers) that inform cultural (in)congruence relinquishes the power upholding said structural factors, and enables participants to confront the norm through increased engagement in healthy eating. In other words, greater understanding of forces that shape cultural (in)congruence grants agency

to navigate structural forces and confront the ascribed norm. Knowledge afforded to college student participants could have informed the relationship between cultural (in)congruence and healthy eating intentions in the present study.

Lastly, the opposite finding may also be due to the present study's exclusive focus on dietary behaviors, rather than the array of health-promotion behaviors (e.g., reading health magazines, aerobics, stress management) assessed by prior research (Harvey and Afful, 2011). Reading health magazines, aerobics, and stress-management are not health-promoting behaviors which have been overtly central to group identity of African Americans, compared to food selection and consumption. While Harvey and Afful (2011) were able to find effects of identity congruence and engagement in more general health-promotion behaviors, the study was not able to conclude the unique role of identity congruence on dietary behaviors, which is deeply intertwined with sociocultural and historical factors. Given that food is both a marker of identity (Wallach, 2014) and consumption of culturally-ascribed foods aids in preserving group cohesion (Oyserman et al., 2007a), it is possible that assessing cultural congruence of specific foods revealed a more nuanced effect of cultural incongruence, such that cultural congruence may be informative of certain health behaviors (e.g., behaviors historically peripheral to the Black identity), whereas cultural incongruence may be more of a driver of engagement in health behaviors where identity has been historically embedded.

Health communication literature can also provide insight into the current result. Personal factors, such as racial identity, which shape uptake of cancer prevention behaviors is a developing area of research that may have profound impact on health disparities for African Americans. Notably, racial identity has been mentioned as "*one potential in-road to culturally relevant tailoring of both gain/loss and targeted messaging"* (Lucas et al., 2018, p. 749). In an experimental study among African American adults, participants were randomly assigned to 1 of 4 different messages, which encouraged obtaining colorectal cancer screening. Gain-framed

messaging delineated the benefits of seeking colorectal cancer screening, while loss-framed messaging highlighted the risks of not seeking screening. Lastly, culturally-targeted loss-frame messages outlined current prevalence and behavioral etiology of colorectal cancer among African Americans, followed by a loss-framed message:

> *"Research has shown that colorectal cancer rates in the United States are highest among African–Americans. Some believe this difference is largely due to controllable factors such as personal lifestyle and behavior decisions. Of note, some research suggests that African–Americans do not take responsibility for obtaining colorectal screenings as soon or as often as members of other ethnic groups.*
>
> *I have read that obtaining a colorectal cancer screening could mean that I will lose years off years to my life. I have also read that colorectal cancer may be affected by personal responsibility, and that the next pages will assess my feelings about colorectal cancer screening as an African American."* (Lucas et al., 2018, p. 751).

Among participants with a stronger racial identity (i.e., operationalized as racial centrality), culturally-targeted loss-frame messages were associated with greater normative beliefs (i.e., social pressure to engage in the behavior). Whereas, among participants with a weaker racial identity, culturally-targeted gain-frame messages were associated with stronger normative beliefs. I argue that culturally-targeted loss-frame messages may reinforce cultural incongruence by distinguishing African Americans' engagement in health behaviors from that of other groups. More specifically, in the message, African Americans were described as "not taking responsibility" for their health in the way that others group do. Although not explicitly stated, the message implied that other racial groups (e.g., White Americans) take control of their health behaviors and make decisions that promote their health, while African Americans do not. When the health behaviors of African Americans are distinguished from and denigrated by other

groups, it may further catalyze a psychological reactance informed by racial justice that confronts the ascribed norm (Abel & Barksdale, 2012).

According to psychological reactance theory, messages that infringe on one's agency (i.e., freedom threat) fuel negative affect, triggering a behavioral response that resists the promoted attitude/behavior (Brehm, 1966). Health promotion messages can be perceived as freedom threats, thus resulting in resistance to the promoted behavior (i.e., lack of engagement) or complete engagement in the opposite, "admonished" behavior (Reynolds-Tylus, 2019). Some research has shown that African Americans exhibit psychological reactance when receiving dietary recommendations from health care providers (Abel & Barksdale, 2012). African Americans' psychological reactance to health behaviors may be intertwined with both current threats to freedom over agency to choose one's diet and with culturally-relevant historical threats to freedom, including: enslavement, diminished autonomy, disenfranchisement, and structural marginalization (Seemann et al., 2004; Woller et al., 2007). Although the current study assessed intentions rather than behavior, the psychological reactance of participants in this study was likely also intertwined with current and historical threats to freedom.

More importantly, the magnitude and degree of reactance can vary across individuals within the same group (Brehm, 1966; Miron & Brehm, 2006). This may especially be the case for African Americans with a strong nationalist ideology, which conceptually assesses the extent to which participants believe African Americans should centralize Blackness in culture, community and commerce. In the current study, when healthy eating was portrayed as incongruent with the Black identity, it could have facilitated a psychological reactance that resisted the promoted attitude (cultural incongruence of healthy eating). In other words, when Blackness was not ascribed to healthy eating, participants resisted this attitude by indicating that they wanted to engage more in this behavior. This reactance is likely informed by racial justice, whereby participants are not acting in ways to preserve their own freedom or behavioral

agency, but are acting in ways that pursue freedom from oppression for the collective. These psychological processes manifested in several important historical movements in American history, one of which involves the Black Panther Party (BPP).

Founded in 1966 by two African American college students, Huey P. Newton and Bobby G. Seale, the BPP transformed the local and national Black community during the Civil Rights era. While initially the party was known for its' militant stance on self-defense, its' lasting legacy is at the intersection of food and racial justice (Garth & Reese, 2020; Potorti, 2017). The BPP viewed hunger as a long-term form of oppression in the US, and thus used food as "a tool of liberation' (Garth & Reese, 2020; Potorti, 2017) and created survival programs, like the BPP Breakfast program, which 'circumvented' the racialized, capitalist food system. Authors of the interdisciplinary research compilation, *Black Food Matters,* noted that the Panthers' survival programs, "*provided tangible resources, cultivated racial pride and self-determination, and functionally challenged power structures that exploit, dominate and control Black bodies"* (Garth & Reese, 2020, p. 88). Of particular importance for this study, the BPP provides a clear example of how food is a "*marker of identity, which can be decoded to reveal much about the eater's social, environmental and cultural world*" (Wallach, 2014). Further, it highlights nationalist ideology as one important factor that frames the value, meaning, and engagement in healthy eating. Lastly, the BPP highlighted the importance of injunctive norms and community support in behavioral engagement in a healthy diet.

Finally, consistent with our prediction, the results indicated that greater perceptions of approval and/or pressure from others to engage in healthy eating (i.e., injunctive norms) was associated with greater intentions to engage in healthy eating. This is also in line with prior research on factors shaping healthy eating behaviors in college students (Morassut et al., 2020; Staunton et al., 2014). Group membership and relation to others constructs value and importance of behaviors. Approval of behaviors directly informs the acceptability of behaviors to

a group, thus subsequent behavioral engagement for group members. Given that groups (and relevant others) provide meaning, support, and agency to an individual, approval from group members both motivates behaviors and provides ongoing social support (e.g., emotional, informational) for behavioral engagement (Jetten et al., 2017; Li & Yan, 2020). For college students, who were the focus of the present study, peers and parents remain primary "socializing agents" even in emerging adulthood. A recent study among emerging adults indicated that greater peer pressure was linked with more reports of consumption of healthy foods (Barberis et al., 2022).Further, approval from relevant others (e.g., parents and peers) may also mechanistically undergird robust evidence, which suggests a positive relationship between social support, healthy eating intentions, *and* behavior. Data is somewhat mixed on the role of parental support in engagement in health promoting behaviors as adolescents transition into emerging adulthood. On one hand, a study examining longitudinal trajectories in engagement in healthy behaviors from adolescence to adulthood indicated that engagement in healthy behaviors declined as participants transitioned into emerging adulthood, even when parental support was high (Frech, 2012). On the other hand, a cross-sectional study concluded that parents remain a significant influence in decision-making, despite increased autonomy over behaviors during this time frame (Morassut et al., 2020) . Despite such mixed findings, peer and parental approval may have important implications for health communication and interventions among emerging adults who are still undergoing behavioral exploration.

Turning to the second set of hypotheses, the current results failed to provide evidence to support any conditional effects of instrumental or affective attitudes on the relationship between culturally-relevant subjective norms and healthy eating intentions. Again, this finding is inconsistent with prior research that has shown that identity informs the perceived importance of health-promoting behaviors (Harvey & Afful, 2011; Oyserman et al., 2007a). One potential reason for the current null finding might be that there are other culturally-relevant predictors of

affective attitudes and cultural (in)congruence that were not measured in this study. For example, robust evidence shows support for a negative relationship between stress and consumption of healthy foods (Hill et al., 2022). In fact, stress has been found to decrease consumption of healthy foods in young adults in a day's span and cumulatively over time (Reichenberger et al., 2021).

Other culturally-relevant sources of stress, such as racial discrimination, have also demonstrated significant effects on eating behaviors of African Americans emerging young adults. Emotional eating is one predominant self-regulatory response among African American college students—particularly women—and African Americans as a whole (Hoggard et al., 2019, 2022; Longmire-Avital & Finkelstein, 2022). Underscored by negative affect, emotional eating is a separate mechanism by which affect shapes eating behaviors of African American college students. Although it has short-term psychologically protective features, this self-regulatory behavior has significant downstream effects on physical health (Hoggard et al., 2019, 2022; Jackson et al., 2010; Mezuk et al., 2013). Specifically, Brown et al. (2022) found that African American emerging adult women who reported experiences of discrimination were six times more likely to report overeating and over five times more likely to report loss of control eating. Culturally-relevant sources of stress and cultural (in)congruence of healthy eating may both be influenced by racism and the racialized experience of African Americans. Importantly, assessing how other culturally-relevant (e.g., racial and weight discrimination) and developmentally-salient (e.g., academic course load) factors influence affect, may yield insight on the directional influence of affective attitudes on healthy eating intentions in African American college students.

Another reason for the null findings could be that attitudes towards healthy eating are situational, fluctuating with daily activities and food availability. Prior research among African American emerging adults concluded that intentions to eat healthy can vary as a function of

daily experiences (Antin & Hunt, 2012). For example, in some instances one may be motivated to eat healthy after engaging in physical activity. Whereas, in other instances, they may desire less nutritious, fast food after going out to a party/function with friends. This situational motivation may be especially relevant for college students who engage in a wide range of activities throughout a given day. Further, attitudes towards healthy eating may also be context-specific for college students, given that their food availability—to a moderate extent—is constrained by the university environment (Sogari et al., 2018). The presence of fast food restaurants and access to unlimited dining has been linked to increased consumption of more calorically-dense foods for students living on and off campus (Bailey et al., 2020; Pelletier & Laska, 2013). In the current study, 38% of participants rated Chick-fil-A as their most frequently visited food vendor on campus, followed by Starbucks, Au Bou Pain, and Panda Express. Examining momentary changes in affect in response to daily activities may shed light on how environmental, *inter*personal (e.g., cultural congruence/incongruence) and *intra*personal factors cumulatively shape attitudes towards healthy eating for African American college students.

Taken together, the results from Study 1 demonstrate the need to expand IBM to account for other individual factors relevant to group identity (e.g., beliefs in distinctiveness of one's groups), as results suggest that racial identity, specifically nationalist ideology, and cultural incongruence may jointly shape motivation to engage in healthy eating among African American college students. Further, one's social network may directly shape healthy eating intentions, by way of social support.

Study 2 Methods

Study 2 employed an experimental design to test the causal effects of culturally-informed subjective norms and mindsets on healthy eating intentions among a sample of 52 African American college students. It was hypothesized that subjective norms, mindsets of health, and

racial identity would independently and interactively affect healthy eating intentions. Specifically, it was expected that healthy eating intentions would be greatest when healthy eating was viewed as culturally congruent, health was viewed as malleable (i.e., growth mindset), and individuals had stronger racial identity. However, it was expected that healthy eating intentions would be the least when healthy eating was viewed as culturally incongruent, health was viewed as fixed (i.e., fixed mindset), and individuals had stronger racial identity. For those who reported a weaker racial identity, subjective norms regarding cultural congruence vs. incongruence would have little effect on healthy eating intentions; however, it is expected that growth mindsets of health would facilitate greater healthy eating intentions.

Participants

Eligibility criteria for Study 2 were almost identical to Study 1 except the last criterion: participants 1) were at least 18 years of age, 2) self-identified as Black/African-American, 3) were enrolled as an undergraduate student at the time of data collection, 4) presented no eating disorder symptomology and 5) had not participated in Study 1. An *a priori* power analysis conducted using G*Power 3.1 (Faul et al., 2009) indicated that 151 participants would be needed to detect a small-to-medium sized effect (f^2= .12) with 80% power for analysis with three predictor variables (i.e., cultural congruence and mindsets of health, racial identity), three two-way interactions (cultural congruence X racial identity, cultural congruence X mindsets, and mindsets X racial identity), one three-way interaction (cultural congruence X mindsets X racial identity), and four potential covariates. As discussed above, the covariates were identified via zero order bivariate correlations (i.e., age, gender, and past eating habits). The effect size was determined by drawing on prior research detecting a medium-sized effects of racial typicality on health behaviors (Harvey & Afful, 2011) as well as research detecting a small-sized effects of mindsets of health (f^2 = .12; Schreiber et al., 2020). A total of 495 students were screened, and 68.0% (*n* = 337) were determined to be ineligible due to clinically meaningful symptoms of

eating disorders. Another 106 cases were excluded for partial survey completion (*n* = 101) or year in school (*n* = 5), yielding a total sample size of 52 for Study 2.

Participants were, on average, 20 years of age (age *M* = 19.92, *SD* = 2.93) and primarily female (65.4%) and first-year students (53.8%). Generally, participants stated that their parents/caregivers could financially afford to be selective with food purchased for the household (*M*= 3.58, *SD* = 1.16) and most were not enrolled in federal assistance programs (e.g., SNAP, WIC; 55.8%), while growing up. Fifty percent of participants indicated that their parents/caregivers owned a home and most experienced food security (86.5%). Currently, most participants indicated a level of financial security to be selective over their food choice (*M* = 3.52*, SD* = 1.16) and are not enrolled in federal assistance programs (e.g., 69.2%). Across participants, BMI was in a "healthy" range (*M* = 23.91*, SD* = 4.04*),* and participants consumed fruits or vegetables about 14 times over the course of 30 days (or every other day; *M* = 14.52*, SD* = 15.61*).*

Procedure

Pilot Test

Prior to conducting study 2, the experimental manipulation (i.e., News Blurbs) of culturally-informed subjective norms (i.e., cultural congruence [healthy eating is for African Americans] vs. cultural incongruence [healthy eating is NOT for African Americans]) and mindsets of health (i.e., growth [health status can change through behaviors] vs. fixed [health status is biologically predetermined]) was pilot tested in a sample of 5 African American college students (including current research assistants, and my personal network).

The blurbs' content systematically varied by subjective norms (culturally congruence vs. incongruent) and mindsets of health (growth vs. fixed) to yield four conditions: (1) culturally incongruent X growth mindset; (2) culturally incongruent X fixed mindset; (3) culturally

congruent X growth mindset; and (4) culturally congruent X fixed mindset (Appendix A). Specifically, subjective norms were manipulated by the following paragraph:

> Food is important to the essence of African Americans, and we knew it! What you may not know is which foods have grown in cultural significance in recent years. Researchers at the University of Michigan were interested in understanding how African Americans view healthy eating. They found that African Americans in the study [*viewed/didn't view*] healthy eating as an essential part of being African American overall. In fact, a little over 85% of the 247 African American college students who participated in this study reported that they have been [*encouraged/discouraged*] by their family and friends [*to eat/from eating*] healthy at least once. Approximately the same number of participants (82%) also reported that they have been [*encouraged/discouraged*] by their friends and/or roommates [*to eat/from eating*] healthy in the past. These researchers also analyzed data from a nationally-representative sample of 16,253 African Americans ages 18 and 65 in the 2018 American Study of Food and Nutrition. They found that [*over 70%/less than 25%*] of African Americans reported eating healthy on a regular basis (i.e., at least 4 servings of fruits and/or vegetables per day). The researchers concluded that heathy eating has [*more/less*] importance for African Americans than generally assumed.

The mindsets of health were manipulated by the following paragraph:

> Many people strive to make changes to their weight. [*And, when/However, even when*] people are motivated and encouraged to change their lifestyles, such as changing what they eat, individual health [*can be drastically improved/is still pretty hard to change*]. Some researchers have found that health [*can be changed and improved/is pretty stable*] over time. According to Dr. Medin, a psychologist at the National Institute of Health, a person's health [*could be/could not be*] improved [*with/even with*] enough motivation and support: "Usually, there are some events in a person's life that motivate

them to change. [*Sometimes, that's just what they need to start changing their behaviors and improve their health/Most of the time, that's just not enough to change their underlying health*]." Other researchers, like Dr. Russell Kelly, a biogeneticist at UCLA, echoed similar conclusions. "[*With/Even with*] enough drive and some help, people [*seem/do not seem*] to be able to change or improve their physical health" Dr. Kelly said. These studies suggest that health is rather [*malleable/fixed*] and [*well under/beyond*] personal control.

Participants were asked to read one of the four articles. Then, they provided input and critique of the article on its credibility, messaging, and appearance. Participants were asked to provide recommendations to increase the article's appeal and relevance. Participants indicated that manipulation was realistic, contained no grammatical errors, and was visually appealing.

Main Study

Similar to recruitment methods for Study 1, study advertisements were shared through various recruitment methods (e.g., SONA portal, highly-trafficked school-wide channels [Digital monitors, TelegRAM, OMSA newsletter], and student-led group-text messaging apps). Interested students were directed to Qualtrics Online Survey platform (Qualtrics, Provo, UT), where they completed an online-screener to determine eligibility. Eligible participants were directed to the online consent form which detailed the study topic, purpose, and measures as well as review data confidentiality and privacy. After reading the consent form, eligible participants self-enrolled in the study.

Once enrolled, participants were randomly assigned (using the Qualtrics Randomizer feature) to read one of four news blurbs. After reading the news blurbs, participants completed a survey including measures of healthy eating intentions (the outcome), racial identity (a moderator), and potential covariates. Participants watched pre-recorded debriefing created for

study purposes. At the end of the survey, they completed the manipulation check assessing their comprehension of news blurb. On average, study completion took approximately 20 minutes. Upon completion, participants were automatically be granted .50 research credits. If participants completed the study outside of SONA, they were entered into a raffle to receive an Amazon e-gift card.

Measures

Participants completed the same measures of healthy eating intentions, racial identity, subjective norms, mindsets of health, and demographics as in Study 1.

Manipulation Check.

To assess comprehension of the study's manipulation two items were employed. To assess subjective norms, participants indicated their (dis)agreement with the following item: "*In the article you read, the authors indicated that healthy eating was common among Black/African Americans in the recent years*." To assess mindsets, participants indicated their (dis)agreement with the following item: "*In the article you read, the authors stated that people's health could be improved with motivation and support*." The scale ranged from 1 (Strong disagree) to 7 (Strongly agree). At the end the study, the participants indicated whether the information in the fictitious articles, "felt right" to them in the following item: "*The information in these articles feels right to me."* Participants rated their level of agreement on a 7-point Likert scale ranging from (1) strongly disagree to (7) strongly agree. This item also served as an indicator of participant skepticism.

Analysis Plan

Data was screened for missingness prior to main analyses. A non-significant Little MCAR's test, $\chi^2(28) = 34.56$, $p = .183$, indicated that data was missing at random. Listwise

deletion was used in the case of random missingness. Assumptions of normality, linearity and linearity of error were assessed and met.

Study 2 Results

Manipulation check

Two separate 2 (subjective norms: culturally congruent vs. incongruent) X 2 (mindsets: growth vs. fixed) between-subject ANOVAs were conducted to examine the presence of successful manipulations of subjective norms (i.e., incongruent, congruent) and mindsets of health (i.e., fixed, growth). All assumptions of homogeneity of variance were met. Participants in the incongruent condition did not significantly differ from participants in the congruent condition in their recall of the manipulation [F (1,48) = 2.53, MSE = .47, p =.12, η^2 = .05], indicating that the manipulation was not quite successful in modifying participant's perceptions of relevance of healthy eating to the Black identity. Similarly, participants in the fixed condition did not significantly differ from participants in the growth condition in their recall of the manipulation, F (1, 48) = .06, MSE = .39, p =.81, η^2 = .001), also indicating that mindsets of health were not significantly manipulated. A majority of participants (81%, n =13) in condition 1, 92.8% (n = 13) of participants in condition 2, 70% (n = 7) of participants in condition 3, and 91.6% (n = 11) of participants in condition 4 failed the manipulation check of cultural congruence and/or mindsets of health. The sample size for each cell is as follows: condition 1 (n = 16), condition 2 (n = 14), condition 3 (n = 10), and condition 4 (n = 12). Table 5 outlines the details of the manipulation check. To assess the success of the manipulation, participants were asked to recall content approximately 12-15 minutes after completing several measures. By nature of an online study which can be less involved than in-person studies, participants may have been rushing through the study (Hauser et al., 2018). We proceeded with hypothesis testing because our manipulation could have still primed participants with cultural (in)congruence and mindsets of health at the onset of the study.

Descriptive Statistics

On average, participants endorsed intentions to eat healthy in the next two weeks (*M* = 62.82*, SD* = 20.32*).* Healthy eating was viewed as somewhat congruent with Black identity, indicated by values higher than the scale midpoint (*M* = 2.97*, SD* = .57*)*. Healthy eating was also viewed as incongruent with the Black identity, as evidenced by values that were higher than the scale midpoint (*M* = 3.14*, SD* = .77*).* Participants indicated approval from relevant others to engage in healthy eating (i.e., injunctive norms, *M* = 4.21*, SD* = .81)*.* Participants generally endorsed a growth mindset of health, believing that health is changeable (*M* = 5.52*, SD* = 1.02*).* There was also strong support for instrumental attitudes towards healthy eating, such that participants viewed healthy eating as having physical, emotional, mental, social, and familial benefit (*M* = 3.52, *SD* = .95). Participants indicated strong positive affect (*M* = 17.72*, SD* = 4.9*)* and less negative affect towards healthy eating (*M* = 8.61*, SD* = 4.31*).* Participants also endorsed a high level of perceived behavioral control over their ability to engage in a healthy diet (*M = 5.09, SD* = 1.01). Lastly, participants indicated that being Black was highly central to their identity (*M* = 4.94*, SD* = 1.11). Further, participants highly endorsed the belief that African Americans should distinguish themselves from other ethnic groups and partake in Black cultural byproducts (i.e., nationalist ideology*, M* = 4.12*, SD* =.97).

Participants who were in the culturally congruent conditions reported more consumption of fruits and vegetables in the past 30 days (r_{pb} = .34*, p* = .02)*.* Intentions to eat healthy were associated with nationalist ideology (*r* = .35, *p* = .01), such that greater belief in the need to distinguish Blackness from other ethnic groups was associated with more intentions to eat healthy in the next two weeks. Cultural congruence was positively associated with racial centrality (*r* = .38, *p* = .006) and nationalist ideology (*r* = .36, *p* = .008), such that a stronger racial identity was associated with greater perceptions of healthy eating as being characteristic of African Americans. Further, older students reported more intentions to eat healthy in the next

two weeks (r = .27, p = .05). The view that healthy eating is not characteristic of African Americans was positively associated with nationalist ideology (r = .42, p = .002) and a growth mindset of health (r = .39, p = .004). Further, participants who identified as a female reported more cultural incongruence compared to participants who endorsed a male gender (r = .36, p = .01). As expected, racial centrality was positively associated with nationalist ideology (r = .71, p < .01). Stronger racial centrality and nationalist ideology were linked with a growth mindset of health such that participants who indicated that being Black was important to their sense of self and strongly believed African Americans should engage in ethnic-specific cultural products, also perceived health to be changeable (r = .32, p = .02; r = .34, p = .01, respectively). Because age, gender, and past eating habits were significantly related to either the predictor or outcome variable, they were treated as covariates in the main analyses.

Main Hypothesis Testing

To investigate the role of mindsets of health and cultural congruence on healthy eating intentions while adjusting for age, gender, and past eating habits, two hierarchical linear regressions were computed (one for each moderator). Assumptions of univariate and multivariate normality were met. Significance levels were adjusted to account for family wise error using the *Bonferroni correction (p* < .025). The overall model was not significant, F (9,42) = 1.56, MSE = 19.62*,* p = .16 R^2= .25. Although the overall model was not significant (ΔR^2= .11, ΔF (3,45) = 2.0, p =.13), the main effect of mindset of health on healthy eating intentions was statistically significant (β = .32, p = .02), such that growth mindsets predicted greater healthy eating intentions than fixed mindsets. On the other hand, there was no main effect of subjective norms on healthy eating intentions (β = -.06, p = .79). The addition of three two-way interactions did not improve the model (ΔR^2= .01, ΔF (2,43) = .19, p =.90), and none of the two-way interactions between subjective norms and grand-mean-centered racial centrality (β = -.09, p = .63), mindsets and racial centrality (β = .08, p = .66), and subjective norms and mindsets (β = -

.06, p = .79) were significant. Finally, an addition of a three-way interaction among subjective norms, mindsets of health, and racial centrality did not improve the model either, (ΔR^2= .02, ΔF (1,42) = .98, p =.33).

A second analysis was conducted with grand-mean-centered nationalist ideology as a moderator. Similar to the first model, all model variables entered together did not significantly predict changes in healthy eating intentions (F (10, 41) = 1.63, MSE = 19.17, p = .13, R^2= .29). There was also no main effect of subjective norms (β = .02, p = .90) or mindsets of health (β = .27, p = .05) on intentions, ΔR^2= .14, ΔF (3,45) = 2.91, p =.04. The addition of three, two-way interactions did not significantly improve model fit (ΔR^2= .00, ΔF (3, 42) = .03, p =.99), and two-way interactions between subjective norms and nationalist ideology (β = -.03, p = .84), mindsets and nationalist ideology (β = .04, p = .85), and norms and mindsets of health (β = -.01, p = .95) were not significant. Lastly, the three-way interaction among subjective norms, mindsets of health, and nationalist ideology was not significant (ΔR^2= .02, ΔF (1,41) = 1.18, p =.28).

Study 2 Discussion

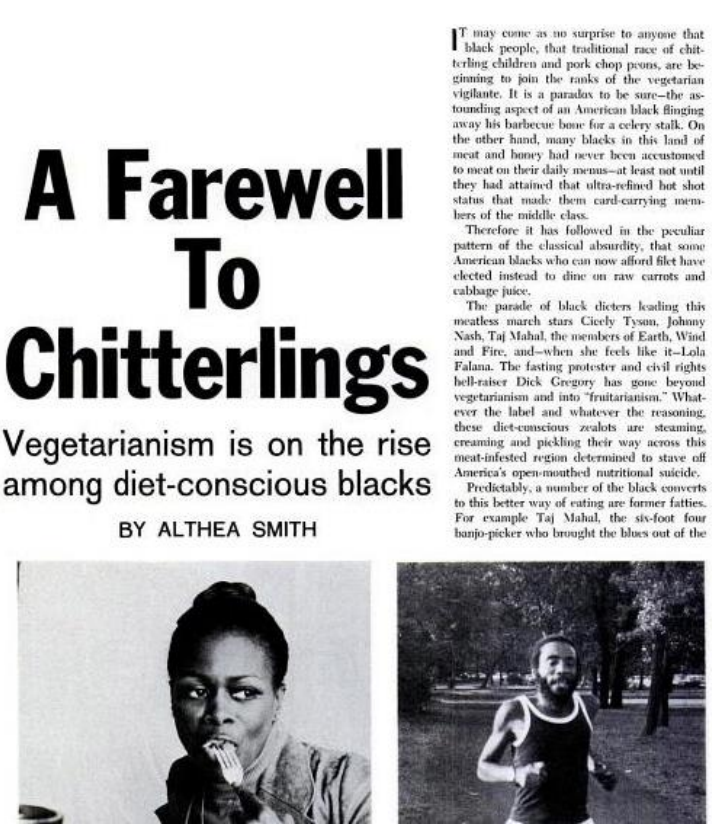
This study explored the causal effects of culturally-relevant subjective norms and mindsets of health on healthy eating intentions among African American college students. Results indicated that the manipulation of subjective norms and mindsets of health was unsuccessful. Participants did not correctly recall their condition-specific portrayal of cultural congruence or mindsets of health.

The failed manipulation could be for several methodological reasons. First, the manipulation lacked sufficient ecological validity even though the study materials were piloted tested. Retrospective conversations with several undergraduate research assistants suggest that some participants might have perceived the use of generic stock photos in the article manipulation aesthetically unpleasing (i.e., “ugly”) and thus “fake,” which in turn might have

rendered the article as an experimenter manipulation (Blackstone, O and Sweat, G, personal communication, 2023). Further, the manipulation format (i.e., journal article) did not present information through a media channel known to directly influence social norms for the current generation (e.g., social media). Specifically, college students frequently gather information that can have immediate impact on social norms via social media platforms (e.g., Instagram, Tik Tok;Lupton, 2021). In fact, many young adults both share and obtain health information from social media (Hausmann et al., 2017; Lupton, 2021). This is especially the case among women (Hausmann et al., 2017). These channels provide an unfiltered (and unverified) platform for individuals across race and ethnicity to cultivate a public forum and dialogue around food. In short, social media is a hub of information on “diet culture” (Ayguasanosa Ávila, 2022). Given the accessibility and permeability of messages on social media platform, a concise infographic or short video clip to display the study’s manipulation may have afforded more ecological validity.

Another way to strengthen the manipulation, thereby boosting the study’s internal validity, would have been to require participants to come into a laboratory setting to read the manipulation in-person, to ensure participants are engaging in the study procedure with minimal distractions. The nature of the online study likely increased both physical and digital distractions. Given that attention spans have waned as technological distractions have risen in the past two decades (Subramanian, 2018), conducting an in-person experiment may have strengthened the study’s internal validity by providing an environment that supports enhanced focus.

Considerations for the study's failed manipulation also include message framing. While gain-framed messaging has been shown to be effective for prevention behaviors such as diet, there is much support that loss-framed messages facilitate more intentions to engage in health-promoting behaviors particularly among African Americans (Lucas et al., 2018). When pairing a loss-frame message with a culturally-targeted message, normative beliefs for seeking colorectal cancer screening (e.g., colonoscopy) were significantly higher (Lucas et al., 2018). This relationship varied as a function of racial identity, such that this result was significant for participants with a stronger racial centrality. In the present study, pairing a culturally tailored message—that emphasized healthy eating as culturally (in)congruent—with a loss frame message about the risks of not engaging in a healthy diet may have strengthened the study's manipulation by building on prior health communication research.



A Farewell To Chitterlings

Vegetarianism is on the rise among diet-conscious blacks

BY ALTHEA SMITH

IT may come as no surprise to anyone that black people, that traditional race of chitterling children and pork chop peons, are beginning to join the ranks of the vegetarian vigilante. It is a paradox to be sure—the astounding aspect of an American black flinging away his barbecue bone for a celery stalk. On the other hand, many blacks in this land of meat and honey had never been accustomed to meat on their daily menus—at least not until they had attained that ultra-refined hot shot status that made them card-carrying members of the middle class.

Therefore it has followed in the peculiar pattern of the classical absurdity, that some American blacks who can now afford filet have elected instead to dine on raw carrots and cabbage juice.

The parade of black dieters leading this meatless march stars Cicely Tyson, Johnny Nash, Taj Mahal, the members of Earth, Wind and Fire, and—when she feels like it—Lola Falana. The fasting protester and civil rights hell-raiser Dick Gregory has gone beyond vegetarianism and into "fruitarianism." Whatever the label and whatever the reasoning, these diet-conscious zealots are steaming, creaming and pickling their way across this meat-infested region determined to stave off America's open-mouthed nutritional suicide.

Predictably, a number of the black converts to this better way of eating are former fatties. For example Taj Mahal, the six-foot four banjo-picker who brought the blues out of the

Figure 11. 'Farewell to Chitterlings', 1974 Article Published in Ebony Magazine

In regards to message framing, the present study's manipulation headings may have lacked mundane realism, particularly the headings for cultural (in)congruence (e.g., "Kale is not for US"). Historical articles (See Figure 11), which explored dietary trends of African Americans,

overtly demonstrated the intersection of race, identity, and food selection as a demonstrative posture against historical foodways linked to oppression (Wallach, 2014). This article shown in Figure12, was published in a Black-run journal, *Ebony*, in 1974. The publication of this article also coincided with the food justice efforts of the Black Panther party, mentioned in Study 1. Using a previously published article would not only have increased mundane realism, but also would have situated the participant's cognition to more effectively prime racial identity, as did previous studies which found significant effects of identity congruence and health behavior (Oyserman et al., 2007b).

IT may come as no surprise to anyone that black people, that traditional race of chitterling children and pork chop peons, are beginning to join the ranks of the vegetarian vigilante. It is a paradox to be sure—the astounding aspect of an American black flinging away his barbecue bone for a celery stalk. On the other hand, many blacks in this land of meat and honey had never been accustomed to meat on their daily menus—at least not until they had attained that ultra-refined hot shot status that made them card-carrying members of the middle class.

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Figure 12. Text of 'Farewell to Chitterlings', published in *Ebony* Magazine

In sum, the medium (i.e., article) and method (i.e., online) of the study's manipulation weakened its ecological validity. Many college students obtain health information that informs their food-decision making from platforms that elevate diverse voices. Further, demand characteristics weakened the study's internal validity. The study could have benefitted from a more generationally-relevant and racially-salient manipulation.

Despite the failure of the manipulations, we proceeded to test our hypotheses because there could have been a possibility that the manipulation at least made cultural (in)congruence and mindsets of health momentarily salient in participants' minds (i.e., priming effects), although participants were not able to recall all of the information in each article. Clearly, the results must

be treated as preliminary and interpreted with caution. While results did not provide evidence for causal effects of cultural (in)congruence or conditional effects of racial identity on healthy eating intentions, mindsets of health did predict healthy eating intentions, such that growth mindsets of health were associated with increased healthy eating intentions. These findings support prior research that has shown a positive relationship between growth (as opposed to fixed) mindsets of health and healthy eating intentions, such that growth mindsets of health predicted greater healthy eating intentions. Thomas and colleagues (2019) experimentally manipulated mindsets of health among a sample of African American and White American college students and found evidence that growth mindsets significantly increased intentions of healthy eating among African Americans. Additionally, these findings suggest that mindsets are amenable to change and thus can be sculpted to bolster health-promoting behaviors. Mindset interventions present a promising avenue of future exploration to promote healthy eating among African American college students.

While the long-term efficacy of mindset interventions continues to be examined, it is clear that culturally-sensitive mindset interventions should address underlying vulnerabilities embedded in the experience of a group, rather than targeting a group, on the sole basis of race, which reinforces systematic forces that uphold inequities (Burnette et al., 2022). The latter yields a “blunt”, imprecise intervention that presumes group homogeneity, whereas the former yields a precise (and cost-effective) intervention with clearly-defined intended beneficiaries (Burnette et al., 2022). Further, mindset interventions are only as effective as the consistency of resources afforded by one’s environment (Burnette et al., 2022). Thus, the transition to college presents an optimal window to implement mindset interventions, as campus environments may afford more resources to promote healthy eating than one’s previous home environment (Oyewole & Khan, 2018). The current study’s findings add to the nascent literature exploring mindsets of health and healthy eating intentions and behaviors among African Americans. Interventions should

clearly-define intended beneficiaries of the intervention, and communicate the changeable nature of health to effectively target this psychological antecedent underlying motivation to eat healthy among African American college students.

Taken together, these results highlight potential effects of growth mindsets on healthy eating intentions of African American college students. In light of the study's failed manipulation, results amplify the breadth of factors informing norms (e.g., social media) of African American college students who traverse various social, cultural, and physical environments, while also navigating physical and socioemotional development.

Overall Discussion

By centralizing culture in food decision-making, this project contextualized the antecedents of intentions to eat healthy among African American college students. This study integrated two social psychology theories (i.e., identity-based motivation and mindsets of health) into the widely-applied health framework, Theory of Planned Behavior. In doing so, this study took initial steps in unearthing mechanisms that inform healthy eating intentions among African American college students. We first examined the direct and indirect effects of culturally-relevant subjective norms on healthy eating intentions using a cross-sectional study design. To examine causal effects of cultural congruence as well as mindsets of health on intentions to eat healthy, we experimentally manipulated cultural (in)congruence and mindsets of health via newspaper articles. Results indicated that culturally-relevant subjective norms interact with one's racial identity to shape healthy eating intentions. Although this study aimed to distinguish the role of culturally-relevant subjective norms from that of racially-prototypical behavior, results suggest that cultural (in)congruence and racial identity are intertwined, in that motivation to eat healthy may be—at least, in part—reactionary to racialized food systems and practices. When examining communities most impacted by inequitable access to nutritious foods, including African Americans, it is evident that the food system is a racialized process—from farm/factory

to table (Garth & Reese, 2020). If food production, distribution, and consumption are subject to the effects of racism, then it is likely that food selection is also. Understanding food availability and selection (and subsequent nourishment) from this lens is critical in understanding the ramifications of cultural (in)congruence and mindsets of health on healthy eating among African American college students.

First, the unexpectedly high rate of college students who were deemed ineligible and screened out from this study should be acknowledged. Specifically, over two-thirds of individuals screened for both studies were ineligible for participation due to subclinical-threshold eating disorder symptomology. As such, the ineligibility rate calls to question the external validity of prior research exploring racial differences in disordered eating symptomology, which has repeatedly concluded that African American cultural norms regarding appearance ideals, which are favorable of all body sizes, are protective against disordered eating in African Americans (Burke et al., 2021; Lovejoy, 2001). When study samples lack sufficient representation of African Americans, unique contextual factors shaping eating behaviors of African Americans are systematically negated(Schaefer et al., 2015). Further, researchers are unable to elucidate group-specific, culturally-relevant factors that inform within-group heterogeneity of eating behaviors among African Americans. Of note, frameworks which have informed research and treatment of disordered eating have been inherently W.E.I.R.D. (White, Educated, Industrialized, Rich, and Democratic), in that research has primarily been conducted with White women in the cultural context of wealthy, industrialized societies (Burke et al., 2021). In relying on WEIRD models, substantial gaps in knowledge on the etiologies and trajectories of disordered eating among African Americans exist.

However, within the last decade, a growing body of literature has shown higher prevalence of unhealthy weight-control behaviors (e.g., purging, fasting) and binge eating among African Americans, across the developmental life-span (Cassidy et al., 2012; Goode et

al., 2020). For instance, a recent study exploring long-term trajectories of unhealthy weight-control behaviors and binge eating revealed that unhealthy weight-control behaviors steadily increase across the life-span for African American women, whereas these behaviors peak earlier in adolescence and slowly decline among other racial-ethnic groups (Simone et al., 2022). Further, binge eating peaks in adolescence (ages 11-18 years) and spikes again in adulthood (ages 27-33 years) for African American women (Simone et al., 2022). There is some evidence to suggest that mechanisms driving unhealthy-weight control behaviors in African Americans may differ from those of White Americans (Goode et al., 2020). Moreover, mechanisms derived from W.E.I.R.D. models (e.g., thin appearance ideals) are less predictive of disordered eating among African Americans college students than White American college students (Burke et al., 2021). A significantly higher prevalence of disordered eating symptomology among African American college students found in the present study—and African Americans in general in recent research—may be also explained by the disenfranchisement and chronic stress that emerges from racism and discrimination, respectively.

The effect of stress on behavioral efforts to restore internal balance (i.e., coping) is well-documented (Biggs et al., 2017; Lazarus & Folkman, 1984). Chronic stressors afforded by one's social, political, and physical environment has also repeatedly shown direct effects on self-regulatory coping behaviors(Jackson et al., 2010; Mezuk et al., 2013, 2022). As a racially-minoritized group, African Americans experience racism and discrimination as prominent sources of stress (Clark et al., 19991101; Pascoe & Smart Richman, 2009), which undergirds health inequities and racial health disparities (Sternthal et al., 2011). Self-regulatory coping behaviors (e.g., emotional eating) that emerge in response to racism and discrimination have immediate (e.g., down-regulation of HPA Axis) and long-term (e.g., obesity) implications on physical health (Hoggard et al., 2019, 2022). For instance, African Americans who reported

more accounts of institutional racism (e.g., being denied access to purchase a home due to race), reported more emotional eating (Hoggard et al., 2022). As noted in the Study 1 discussion, emotional eating is a predominant dietary coping mechanism among African Americans, particularly women. Recent studies have documented the extent to which race-related stress from discrimination directly shapes eating behaviors and health outcomes of African American college students (Brown et al., 2022; Diggins et al., 2015). After encountering racial discrimination, African American college students were six times more likely to report overeating, and over five times more likely to report loss of control eating(Brown et al., 2022). Further, identity-relevant factors (e.g., racial centrality and public regard) exacerbated the effect of racial discrimination on loss of control eating, such that among individuals whom being Black is a core aspect of their identity, the relationship between racial discrimination and emotional eating was strengthened. Moreover, evidence suggests that higher rates of obesity among African American college students may be due to the interactive effect of stress—relevant to their racial and gender context—and emotional eating(Diggins et al., 2015).

In the present study, the unexpected high ineligibility rate of disordered eating (including emotional and loss-of control eating) may have been influenced by greater race-related stress reactions in response to a racially-tense sociopolitical climate. As racial tensions rose following the public murder of George Floyd in May 2020, demands for racial justice permeated mainstream discourse while also inciting fear and resistance among White Supremacists. The timeline for data collection of this project overlapped with several landmark and emotionally-charged events including: the removal of Confederate Statues throughout the city of Richmond (Hauser, 2022)—many of which are less than a few miles from main student campus—and the racially-motivated Buffalo Mass Shooting (C. Thompson, 2022). These events had profound impact on the African American community, both nationally and locally and could have made racial and political ideologies of African American college students more salient during data

collection. Indeed, race-related stress, discrimination, and other ascribed stereotypes (e.g., strong Black woman schema) have been associated with emotional eating (including binge eating) among African Americans (Brown et al., 2022; Hoggard et al., 2022; Longmire-Avital & Finkelstein, 2022; Longmire-Avital & McQueen, 2019).

Present-day implications of racism on eating behaviors of African Americans can be seen as early as the period of enslavement. In his autobiography, a notable abolitionist, Fredrick Douglass, shared several accounts when food was 'weaponized' by the slaveholding class by withholding food as a form of punishment or forcing those who were enslaved to consume unreasonably large portions of food during holidays to the point of near unconsciousness (Douglass & Jacobs, 2000; Garth & Reese, 2020). Due to its insidious nature, racism constructs food distribution (thus food availability), selection and consumption as a racialized process, yielding transgenerational effects on cultural norms regarding food decision-making for African Americans.

Taken together, the value ascribed to a behavior is entangled with both the racialized identity and experiences of a group. As mentioned in Study 1, the Black nationalist movement of the Civil Rights era linked pursuit of nutrition with the liberation of Black people, and viewed their food practices as a facet of "nation-building"(Garth & Reese, 2020; Wallach, 2014). Conversely, as the BPP declined, nutritious food availability in lower income communities substantially decreased (Garth & Reese, 2020), coinciding with drastic increases in diet-sensitive diseases among African Americans. The historical underpinnings of food distribution and availability suggest that the environment can also directly shape descriptive norms of healthy eating such that lack of access to fresh foods directly influences engagement in and modeling of healthy eating among group members (Cooksey-Stowers et al., 2017; Dhillon et al., 2019; Ghosh-Dastidar et al., 2014).

Because identity is woven throughout the food system, identity emerges as an essential determinant of intentions and ultimately behaviors. According to identity-based motivation (IBM), identity consequences (e.g., how people react to an individual's food choices that signal group identity) (Oyserman et al., 2007b), rather than outcome expectancies (e.g., the anticipated ramifications of healthy eating), motivate behavior as posited by Theory of Planned Behavior (TPB; Ajzen, 1991). The multidimensional nature of food decision-making of African Americans weakens the predictive validity of TPB as a systematic unidirectional framework. Further, food choice is not always methodical and "planned" as TPB suggests. The addition of IBM and mindset of health improved the cultural appropriateness of the model; however, the results challenged the relevance and predictive weight of some constructs in the model (e.g., instrumental and affective attitudes).

While findings from this study provided support that identity is a factor that is associated with individual's intentions to engage in health behaviors, study results revealed an effect opposite of what was hypothesized. Results did not support the proposed negative relationship between cultural incongruence and healthy eating intentions, but rather showed a positive relationship, specifically among participants with a stronger nationalist ideology. In doing so, these study findings challenged the directional relationship of identity congruence and healthy eating intentions (and behaviors) documented in prior research (Harvey & Afful, 2011; Oyserman et al., 2007b). In some ways, racial identity (particularly nationalist ideology) was protective against the perception that healthy eating is culturally incongruent, as evidenced by the positive association between cultural incongruence and healthy eating intentions. It is also probable that cultural incongruence was associated with increased healthy eating intentions by attaching a relevant identity (i.e., Blackness) to an *un*desired—perhaps historically inaccurate—self (i.e., unhealthy eater). Ascribing relevant identities (e.g., racial identity) to desirable (i.e., health-promoting) behaviors and selves is a core tenet of the Sociocultural Self Model of

Behavior, an extension of IBM research and a framework for interventions employing IBM(Stephens et al., 2012).

Drawing on IBM and cultural models of self and agency research, the Sociocultural Self Model of Behavior asserts that individuals and structures mutually construct each other and perpetually inform human behavior by shaping construal (i.e., value ascription and relevance) of a situation (Stephens et al., 2012). It further suggests that behavioral engagement is highest when individuals' current relevant identities are connected to their desired/future selves. For example, to promote healthy eating, the Sociocultural Self Model of Behavior suggests one's current identity relevant to being an African American should be connected with the desired/future self (e.g., healthy eater). In doing so, individuals are able to construe the meaning of health in their cultural context and develop behavioral strategies that allow them to attain their desired self(Stephens et al., 2012). In sum, this model suggests that effective and culturally-relevant interventions connect salient identities with the identity congruent with the behavior change(Stephens et al., 2012).

While interventions that connect current and future selves through goal-directed self-regulatory behavior have proven effective for certain cultural groups (e.g., White Americans; Kumanyika et al., 2002, 2014), I assert that threading *past*, *present*, and *future* selves may yield a more desired response to health messages and optimal intervention uptake among African Americans—whose dietary habits are entrenched in the history of American and European colonization throughout the African diaspora. For example, psychological reactance—one interpretation of the association between cultural incongruence and greater healthy eating intentions—may be one manifestation of how past experiences inform current construal of health behaviors (Abel & Barksdale, 2012; Reynolds-Tylus, 2019). *Sankofa* is a Ghanian word that translates to "learning from the past to build towards the future" (Garth & Reese, 2020). Interventions grounded in *Sankofa* could have enhanced cultural relevance by drawing on past

cultural knowledge to shape healthier individuals and communities, today. For example, highlighting the efforts of African Americans who paired health with the Black identity (e.g., BPP) in conjunction with present-day African Americans who pursue food justice (e.g., Richmond Food Justice Alliance), may facilitate greater motivation to eat healthy among African Americans. However, these efforts must also be coupled with environmental changes that promote greater access and affordability to nutritious foods (Stephens et al., 2012). Taken together, food-decision making and dietary behaviors of African American college students have historical underpinnings (e.g., BPP food justice), present-day consequences (e.g., behavioral motivation), and future implications for both health and identity.

Limitations

The findings of the present study should be cautiously interpreted in the context of several study limitations. First, errors found in the scoring for the Eating Disorder Diagnostic Scale on the survey platform weakened the tool's sensitivity. For example, scores for symptoms of bulimia were included with scores for symptoms of binge eating, thereby double-counting scores some participants. Despite this procedural error, participants who endorsed either binge or bulimia items were deemed ineligible. In addition, text entries for items assessing binge eating were unable to be scored by the survey platform, thus allowing some participants who endorsed binge eating to continue with study consent. To rectify this error, syntax was computed (Stice et al., 2004) and scores were calculated and reassessed in SPSS.

Despite the aforementioned limitation, the high ineligibility rate due to disordered eating symptomology illuminates an important area of future exploration. A growing body of literature has begun to elucidate structural, interpersonal, and intrapersonal factors that underly disordered eating behaviors in African Americans (Brown et al., Goode et al., 2020; Gardizy et

al., 2023, Simone et al., 2022.; Hoggard et al.,2019, 2023). Cultural (in)congruence and mindsets of health could be two important factors that inform self-regulatory coping behaviors (e.g., emotional eating) and disordered eating. Notably, mindsets of health are most utilized in cases of ego-threat (e.g., discrimination; Burnette et al., 2013). Given the robust evidence demonstrating the causal role of discrimination in dietary coping behaviors, it is likely that a growth mindset may be protective against disordered eating. Future studies could explore conditional effects of disordered eating most prevalent in African Americans (e.g., binge eating) on the relationship between cultural (in)congruence and healthy eating. To sensitively conduct this research and ensure students' emotional and physical needs are addressed, future studies should consider convening a community advisory board of African American college students to aid in research design, interpretation and dissemination.

Secondly, the study's sample size poses a threat to achieved power and external validity. As previously mentioned, over two-thirds of screened individuals were ineligible due to disordered eating symptomology. Further, a considerable portion of eligible participants did not fully complete the study. For this reason, study results are preliminary and have been interpreted with caution. Data collection will remain ongoing until desired sample size is achieved for both studies (Study 1, N = 200; Study 2, N = 180). Recruitment methods should be modified to dispel myths about the research process and build participant-researcher trust to promote commitment to study completion. Recent studies with African American college students showed that passive recruitment methods (e.g., posting flyers, and announcement emails from professors) yield low study enrollment in health-related research (Yancu et al., 2012). Active methods of recruitment (e.g., tabling in Student Commons, in-person class announcements) may aid in optimizing participant recruitment by demystifying the research process. Further, active recruitment methods should: 1) be culturally-tailored by aligning study

goals with African American values and 2) reassure individuals of confidentiality to minimize mistrust between individual and researcher (Yancu et al., 2012).

Thirdly, both studies of the current project relied on global retrospective self-report measures, which are subject to recall bias and do not account for situational factors constrained by one's natural environment (Shiffman et al., 2008; Stone & Shiffman, 1994). Study variables such as affective attitudes, may have interacted with situational factors (e.g., academic stress), contributing to null findings. Study design could be enhanced by applying ecological momentary assessment (EMA) to bolster ecological validity, by capturing participant data in real time and context. Specifically, future studies could apply a time-based EMA design, using semi-random prompts, as employed by other EMA studies exploring culturally-relevant antecedents of eating behaviors in African American college students (Brown et al., 2022). Brown et al. (2022) found differential effects of discrimination on eating behaviors based on frequency of occurrence of discrimination, highlighting the importance of assessing real-time determinants of food-decision making in African American college students. Future studies extending this research should consider assessing momentary changes in other culturally-relevant and developmentally-salient factors known to influence affective attitudes (e.g., race-related stress, academic stress). Further, such a design could elucidate if cultural (in)congruence is relatively stable over time (like racial identity) or context-dependent (similar to affect).

Third, while the study aimed to take initial steps in documenting healthy eating intentions among African American college students, the generalizability of these results across university-type (e.g., Historically Black Colleges and Universities), geographic region (e.g., Northeast), developmental stage, and acculturation status (e.g., Caribbean American, first generation) should be further investigated. The current study did not capture experiences of African American college students at universities that have a substantially larger population of African American students (e.g., Historically Black Colleges and Universities [HBCU]). Significant

differences in health behaviors and weight-outcomes exist based on university-type, such that African American college students report higher rates of obesity at HBCUs compared to African American students at predominately White institutions, highlighting differential access in resources afforded by the college environment (Sa et al., 2020) as well as potential differences in peer norms. Further, it is critical for future studies to assess the generalizability of study findings across geographic region. This study was conducted in the southeast region of the US, which was both the epicenter of chattel slavery and the birthplace of foodways of a "stolen, hybridized people" (Garth & Reese, 2020). The legacy of slavery (e.g., statues of confederate army generals) remains salient in the Southeast region of the US, in ways it may not in other regions, potentially lending the ascription of race to food items to be more perceptible and thus influential on food choice in this region of the US. Resultantly, the magnitude of the effect of cultural (in)congruence on eating behaviors could vary by geographic region.

It is also important to understand how the mechanisms examined in this study shape food decision-making across the developmental lifespan. Developmentally, college students are in a far more transient life stage than older adults (26+; Deshpande et al., 2009). Further, resources and networks afforded to college students are largely constrained by the college environment (Oyewole & Khan, 2018). Given that identity is constructed dynamically in context (e.g., university), the identity of an "undergraduate student" also likely shapes behaviors (e.g., binge-drinking, "all-nighters") in ways distinct from non-collegiate older adults (Oyserman et al., 2014). Notably, studies exploring identity-congruence and health behaviors have only been conducted among adolescents and emerging adults (collegiate and non-collegiate; (Harvey & Afful, 2011; Oyserman et al., 2007b). For this reason, this study should be replicated among older African American adults.

The study sample lacked sufficient variability in ethnicity to explore it as a secondary moderating variable. While African American foodways (e.g., Soul Food) reflect a "fusion" of

cuisine of peoples across the African Diaspora (Garth & Reese, 2020), immigration status may influence the reference group from which individuals distinguish their behavior. For example, behaviors that preserve the identity of US-born African Americans, often emerges in opposition to the White identity (Ogbu, 2004). For African immigrants, behaviors that preserve African identity, may emerge in opposition to the national "American" identity (Jakub et al., 2018). Relatedly, second-generation African college students have mentioned in prior studies that the association of "American foods" and "unhealthy" was heavily engrained during adolescence (Jakub et al., 2018). Moreover, traditional African foods were deemed as healthy (in comparison to American foods) because of the freshness of the foods, hinting at the possibility that cultural congruence (rather than cultural incongruence) could inform healthy eating intentions for African college students. Furthermore, this research suggests that perceived cultural congruence of healthy eating could vary widely among African American people in the US. Future studies should intentionally recruit African, Caribbean, and Latinx African Americans to explore differential effects of acculturation and racialized xenophobia on healthy eating intentions (Jakub et al., 2018; Rodriquez et al., 2020).

Future Directions

In light of the present findings, several theoretical questions emerged regarding the ongoing construction of cultural congruence from a developmental perspective. First, the results begged the question, *how are cultural (in)congruence and mindsets of health learned and reinforced by families and social networks?* Cultural congruence as a form of identity-based motivation is constructed by group identity and preserved by adherence to group norms. Individuals must learn (directly or indirectly) cultural values, beliefs, traditions of the group and learn social norms through observation of and interaction with others (Piaget, 1997; Tudge & Winterhoff, 1993; Vygotskiĭ & Cole, 1978). Socialization is the process by which individuals learn to behave and engage in society in culturally-appropriate ways (Markus & Kitayama, 2010;

Parke et al., 2008). For African Americans, this process centralizes racial-ethnic identity. Whether directly or indirectly, all African American parents “culturally condition” their child(ren) to their ethnic heritage and cultural values, as well as the meaning of race and strategies to navigate one’s minority status (Boykin et al., 1985; Paasch-Anderson et al., 2019). Ethnic and racial socialization is likely a developmental process in which cultural (in)congruence is constructed. No studies, to my knowledge, have explored the intersection between the development of health beliefs/behaviors and identity development through the process of socialization, particularly among African Americans. The ascription of race to certain foods and health behaviors may be explicitly (e.g., stories of ethnic heritage involving food), or implicitly communicated (e.g., sharing recipes, cooking together, communal meals). Mindsets of health are likely to be indirectly communicated through observation (e.g., role-modeling of health behaviors).

How might cultural (in)congruence inform other health-promoting behaviors? Cultural (in)congruence and mindsets of health show great potential to inform message-framing across a variety of health behaviors. Message targeting and tailoring has proven efficacious in shifting behavioral intentions and subsequent behaviors for diet, smoking, physical activity, and cancer prevention interventions (Jensen et al., 2022; Noar et al., 2011). Whereas message *targeting* addresses shared values and collective norms, message *tailoring* affords greater precision by pinpointing individual differences to enhance message effectiveness (Kreuter et al., 2004). Indeed, message receptivity and intervention uptake have shown to be more optimal among African Americans following the use of culturally-targeted and culturally-tailored messages, than non-targeted/tailored messages (Kreuter et al., 2004; Lucas et al., 2018, 2021). Framing messages to address shared values regarding health and group norms presents one way to culturally-*target* messages(Manning et al., 2023). However, framing messages to address individual differences in identification with the group and adherence to group norms (e.g., racial

identity) is one way by which researchers can culturally-*tailor* health messages (Lucas et al., 2018). Researchers have also noted that what remains unclear about culturally-targeted/tailored messages are the mechanisms underlying their efficacy (Noar et al., 2011). I contend that cultural (in)congruence may be one mechanistic driver of the efficacy of culturally tailored/targeted messaging. Specifically, tailored interventions may increase the relevancy of the behavior of interest by positioning the behavior as congruent with the current relevant identity.

How might cultural (in)congruence interact with the environment (e.g., built) to inform healthy eating intentions? This study provided initial evidence to support that cultural (in)congruence and mindsets of health are two factors informing healthy eating intentions of African American college students. Given that food decision-making is contextually-informed(Antin & Hunt, 2012; James, 2004; Sobal et al., 2014; Sogari et al., 2018; Swierad et al., 2017), it is critical that future studies examine the relationship between the environment and culturally-relevant subjective norms and mindsets of health. Food availability and accessibility are critical precursors of perceived behavioral control of healthy eating. Mutually dependent, food availability and accessibility inform healthy eating intentions and behaviors (Belon et al., 2016). For example, both motivation of and engagement in healthy eating are first informed by what is immediately available in one's environment. As a function of food availability and accessibility, group-level descriptive norms (i.e., what people actually eat in my community) emerge. Therefore, cultural (in)congruence of healthy eating may also emerge in response to foods available in one's physical environment.

Further, time constraints may interact with the environment to shape food decision-making. A recent study employing community-based participatory research captured participants' interpretations of the neighborhood food environment using Photovoice. One participant noted, *"I think one of the biggest barriers is time [...] if I get out of here at 6:00 p.m., I*

don't feel like going home and making stir fry or a big salad… mom works late and it's 'oh I will pick up a bucket of chicken', right? Or 'let's order pizza tonight'…" (Belon et al., 2016, p. 22). When time is limited, convenience takes precedence over health values. This quote further illustrates that convenient food options are limited to what food is available in the environment.

In addition, the accessibility of healthy foods (e.g., price) in one's environment can serve as a framework for mindsets of health. When healthy foods are more expensive than unhealthy foods, this can present a challenge to one's goals of healthy eating (Aggarwal et al., 2016; Berkowitz et al., 2018). This instance of ego-threat may prompt behaviors informed by a growth or fixed mindset of health. As previously noted, mindsets have the greatest influence on weight-related behaviors when challenges are presented (Burnette, 2010). In addition, the physically-unavailable and financially-inaccessible nature of healthy foods in predominantly African American communities is a prime example of racialized economic oppression, which entangles racial identity, food access, and health outcomes for African Americans. For this reason, cultural (in)congruence likely emerges in response to environmental access.

Conclusion

Targeting dietary behaviors is a predominant strategy to ameliorate disproportionate rates of obesity among African Americans across the developmental lifespan. African American college students are uniquely positioned in a transient developmental period—emerging adulthood—where health behaviors emerge at the apex of social norms (e.g., family, friends/peers, and significant others), personal experience (e.g., new knowledge, stress, and motivation), and new environmental affordances (e.g., increased agency, dining halls, enhanced walkability). Developing effective, culturally-relevant interventions for African American college students necessitates the identification of factors that inform the multi-dimensional nature of food-decision making. This study integrated two social psychological theories, identity-based motivation and mindsets of health, within the framework of Theory of Planned Behavior, to

assess the role of culturally-relevant subjective norms and mindsets of health on healthy eating intentions among African American college students. Findings from Study 1 indicated that participants with a stronger racial identity were more likely to eat healthy when healthy eating was viewed as incongruent with the Black identity. Findings from Study 2 demonstrated that growth mindsets of health were associated with more healthy eating intentions. Cultural (in)congruence and mindsets of health are likely informed by sociohistorical structural forces (e.g., racism) that have used hunger and food as tools of oppression among African Americans. Future studies should assess the role of other culturally- and developmentally-relevant contextual factors (e.g., race-related stress, academic stress) that influence healthy eating among African American college students. Other future directions include exploring the development and generalizability of cultural (in)congruence and mindsets of health among African Americans across the lifespan and African diaspora.

The Story of Brianna—a revision.

18-year-old Brianna is a bright-eyed African American young adult from Durant, Mississippi. She's deep into her first semester as a college student at Mississippi State University and is loving every moment. The transition to college involved significant changes in her life including: new liberties, new responsibilities, new friends–not to mention a totally new environment. On top of this, Brianna is the first in her family to attend college and is navigating the best she knows how. With all she's juggling, she recently noticed some weight changes. She currently weighs 347 pounds, placing her in the highest obesity weight category (Class III). Lifestyle activities such as walking up the stairs of her residence hall have become increasingly difficult.

As a child, Brianna's mother, Shelia, prepared lunches for community members to supplement her family's income. When asked about foods normally prepared, Shelia noted Turkey wings, fried cabbage, pig feet, and greens. She later said, "*Soul Food is a part of the*

culture. We just like to eat." What Shelia often cooked, although meaningful to the family, was limited by what foods were available at her local grocery store, 15 miles from her home. While at school, Brianna would often choose foods familiar to her rather than foods she never saw prepared in her home as a child. Recently, in one of her courses that explores racism in the US, she learned of historical injustices that informed where food and supermarkets were placed in her neighborhood growing up. She quickly understood that access to food determines what you can eat, and what you eat determines the typical diet in your family—and that diet determines what foods have value to you *and* are habitually apart of your diet. Because being Black is at the core of who she is, learning this information gave her an awareness that empowered her to redefine healthy eating and make dietary choices that are meaningful to her past, promote her health in the present, and will sustain her wellbeing in the future.

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Table 2

Participant Demographics for Study 1

	M	*Freq*	*SD*	*%*	*Range*
Age (years)	19.66	--	2.60	--	*18-35*
Gender					
Male		21		25.9%	
Female		59		72.8%	
Ethnicity					
African-American		68		83.9%	
Caribbean		3		3.7%	
African		13		16.0%	
Latino/a/x		1		1.12%	
Not Listed		1		1.12%	
Year in School					
1st		42		51.9%	
2nd		20		24.7%	
3rd		9		12.3%	
4th		10		12.3%	
Parental Financial Status					
Financial Selectivity in Food Choice	3.98		1.14		
Enrolled in Federal Assistance Program		26		32.1%	
Rented Home		34		42.0%	
Food secure		76		93.8%	
Current Financial Status					
Financial Selectivity in Food Choice	3.54		1.07		
Enrolled in Federal Assistance Program		10		12.3%	
Residency Status					
Pre-COVID					
On-Campus		14		17.3%	
Off-Campus		7		8.6%	
Off-Campus with Parents		48		59.3%	
Other		12		14.8%	
During COVID					
On Campus		22		27.2%	
Off Campus		5		6.2%	
Off Campus with parents		49		60.5%	
Other		5		6.2%	

Table 3

Bivariate Correlations, Means, and Standard Deviations for Study 1

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
1. Intentions	--	.03	.13	.**44****	.03	-.09	**.37****	.**28***	**.61****	-.17	**.36****	.07	.20	-.08	.**32****
2. Cultural Congruence		--	-.15	-.03	-.15	.15	.07	.**34****	.14	-.06	.14	.12	-.05	-.07	.12
3. Cultural Incongruence			--	.06	.15	.13	.09	.15	.21	-.13	.06	-.00	.03	.10	.09
4. Injunctive Norms				--	.13	.09	.**35****	.08	.**26***	-.**47****	.**48****	.11	.15	-.08	.11
5. Racial Centrality					--	.**49****	.07	.00	-.13	-.10	-.07	.17	-.13	-.15	-.**26***
6. Nationalist Ideology						--	.05	.05	-.15	-.15	.01	**.28***	-.**34****	-.09	.04
7. Mindsets of Health							--	.09	.**38****	-.**25***	.**42****	.14	-.08	.**23***	.**23***
8. Instrumental Attitudes								--	.**41****	-.03	.20	-.05	.20	-.06	.05
9. Affective Attitudes: Positive									--	-.05	.**43****	-.03	.**40****	.02	**.21***
10: Affective Attitudes: Negative										--	-.**42****	-.54	.04	.12	.02
11.Percieved Behavioral Control											--	.03	.19	-.04	.01
12. Gender												--	-.17	-.02	.17
13. Past Eating Habits													--	.11	-.01
14. Meal Plan														--	-.01
15. BMI															--
M/Freq	71.31	3.08	3.27	4.47	4.96	4.33	5.65	3.43	16.26	6.76	5.29	59	15.22	49	24.57
SD/%	(15.96)	(.54)	(.74)	(.62)	(1.09)	(.97)	(.87)	(.68)	(5.41)	(3.33)	(.97)	73%	(13.81)	(59%)	(5.95)

*Note. **p <.01, *p<.05. N= 81.* Dummy-coded variables included gender (0=male, 1=female) and Meal Plan (0=yes, 1=no).

Figure 4

Simple Slopes of Cultural Incongruence predicting Healthy Eating Intentions at low, moderate, and high nationalist ideology

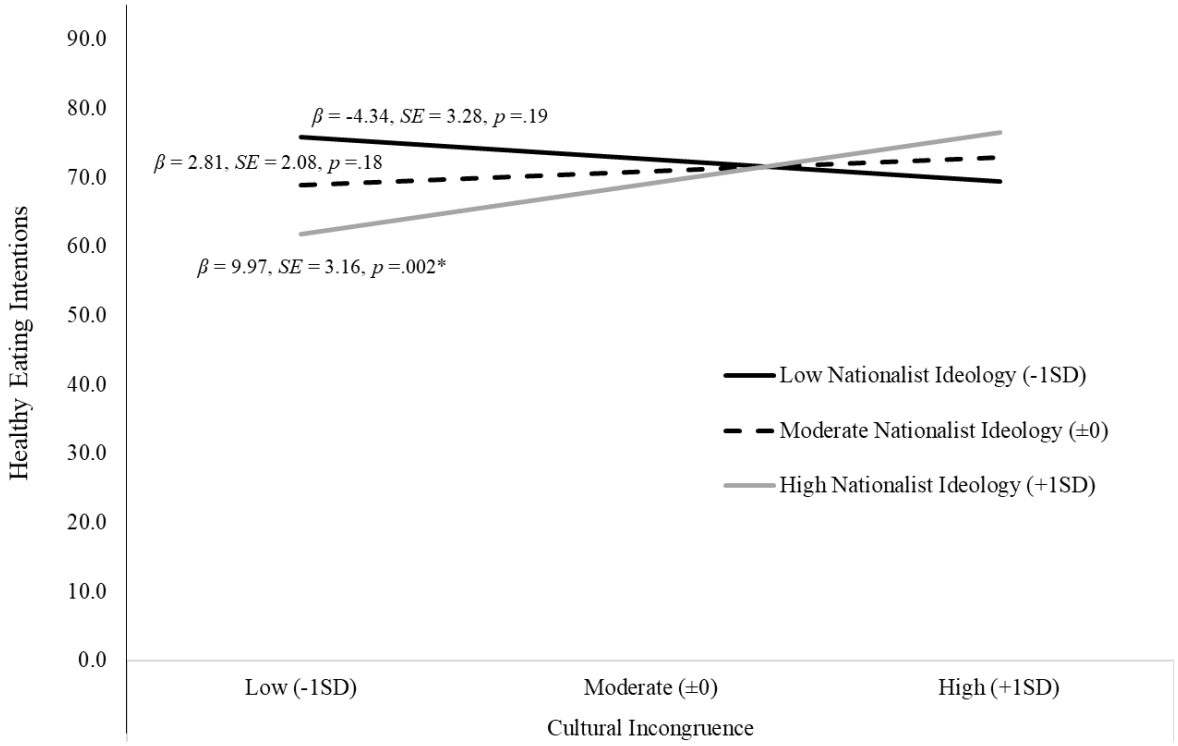
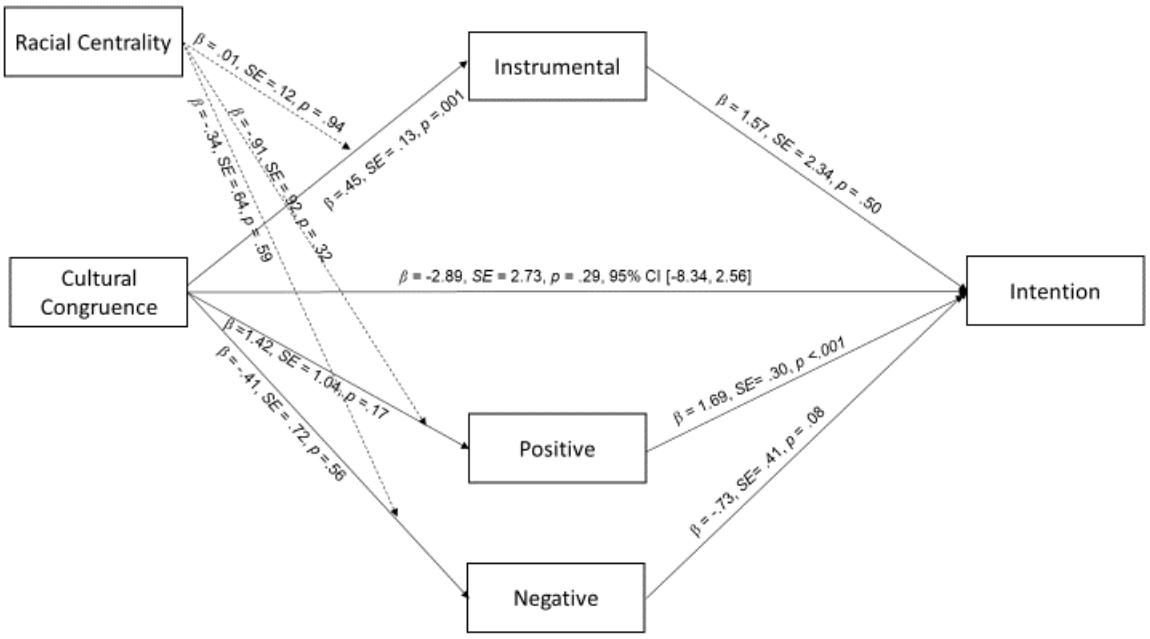


Figure 5

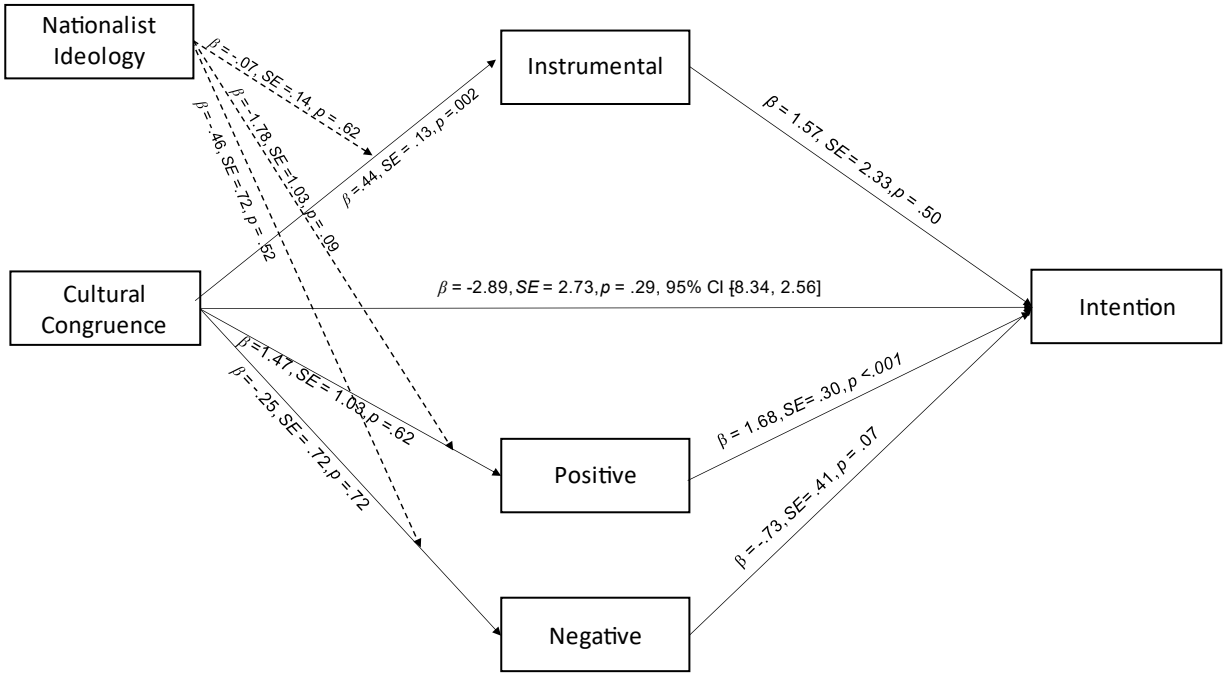
Path Coefficients for Indirect Effects of Instrumental and Affective Attitudes on the Relationship Between Cultural Congruence and Healthy Eating Intentions with Racial Centrality as a Moderator



Note. N= 81. Standardized coefficients are presented.

Figure 6

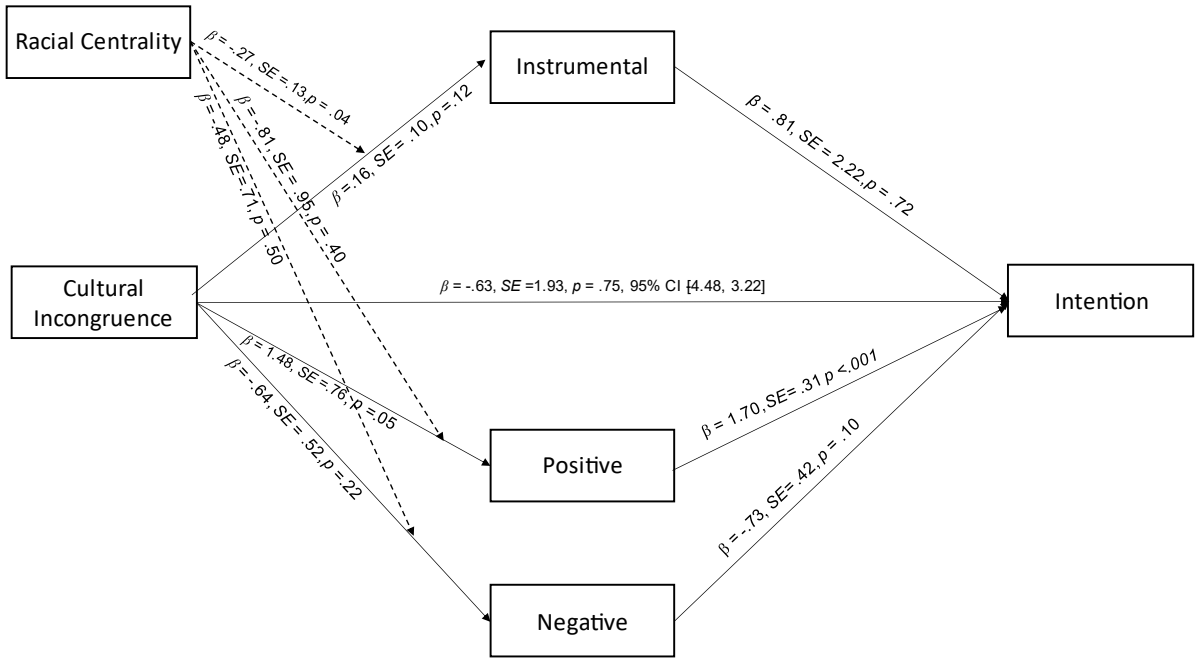
Path Coefficients for Indirect Effects of Instrumental and Affective Attitudes on the Relationship Between Cultural Congruence and Healthy Eating Intentions with Nationalist Ideology as a Moderator



Note. N= 81. Standardized coefficients are presented.

Figure 7

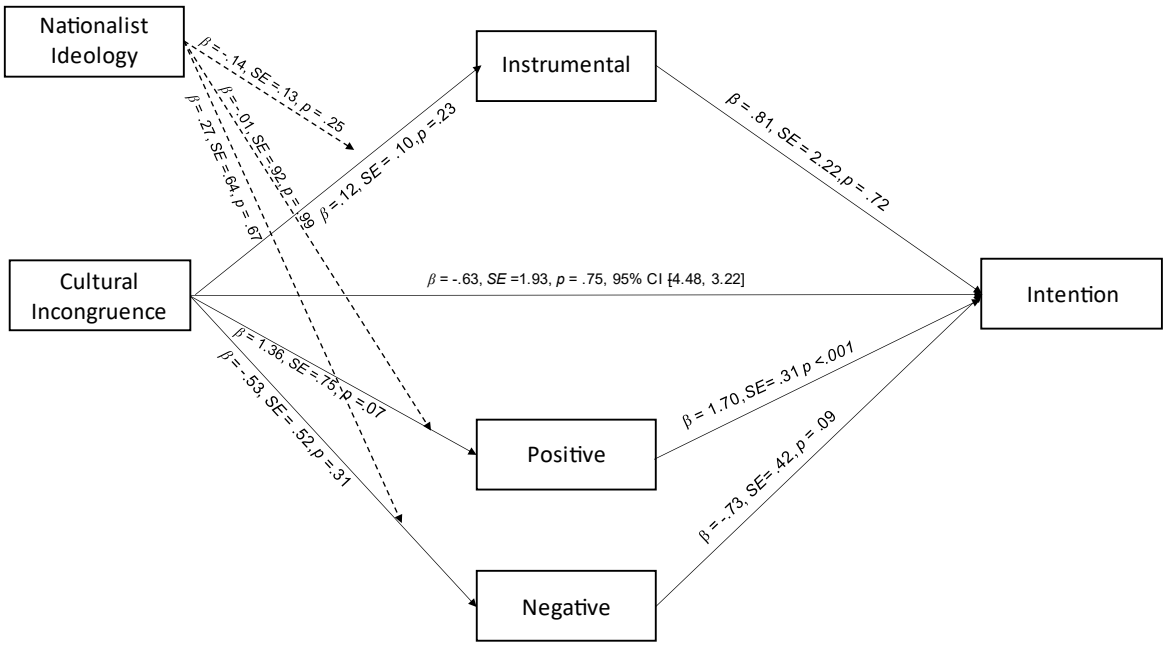
Path Coefficients for Indirect Effects of Instrumental and Affective Attitudes on the Relationship Between Cultural Incongruence and Healthy Eating Intentions with Racial Centrality as a Moderator



Note. N= 81. Standardized coefficients are presented.

Figure 8

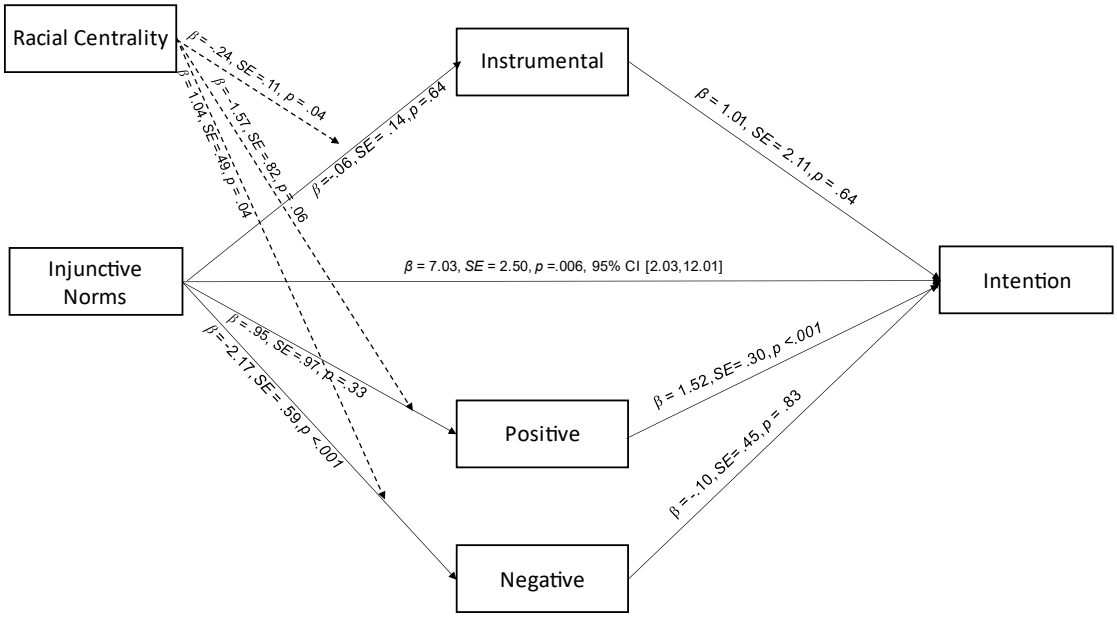
Path Coefficients for Indirect Effects of Instrumental and Affective Attitudes on the Relationship Between Cultural Incongruence and Healthy Eating Intentions with Nationalist Ideology as a Moderator



Note. N= 81. Standardized coefficients are presented.

Figure 9

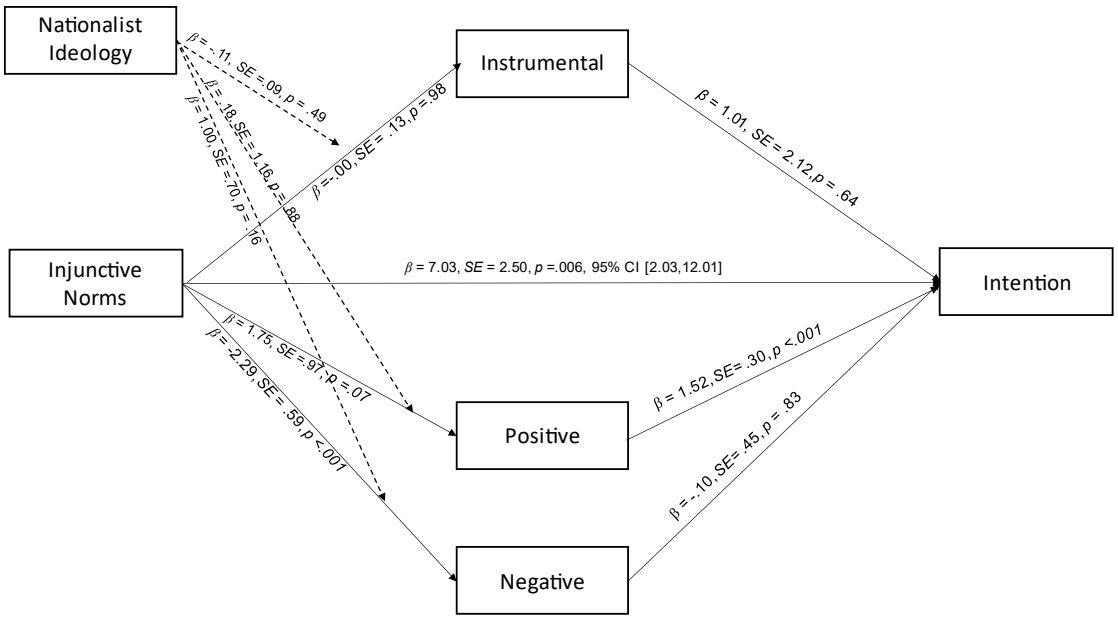
Path Coefficients for Indirect Effects of Instrumental and Affective Attitudes on the Relationship Between Injunctive Norms and Healthy Eating Intentions with Racial Centrality as a Moderator



Note. N= 81. Standardized coefficients are presented.

Figure 10

Path Coefficients for Indirect Effects of Instrumental and Affective Attitudes on the Relationship Between Injunctive Norms and Healthy Eating Intentions with Nationalist Ideology as a Moderator



Note. N= 81. Standardized coefficients are presented.

Table 4

Participant Demographics for Study 2

	M	*Freq*	*SD*	*%*	*Range*
Age (years)	19.92	--	2.93	--	*18-32*
Gender					
Male		17		32.7%%	
Female		34		65.4%%	
Non-binary		1		1.9%	
Ethnicity					
African American		49		94.2%	
Caribbean		1		1.9%	
African		5		9.6%	
Latino/a/x		2		3.8%	
Not Listed		3		5.8%	
Year in School					
1st		28		53.8%	
2nd		11		21.2%	
3rd		6		11.5%	
4th		7		13.5%	
Parental Financial Status					
Financial Selectivity in Food Choice	3.58		1.16		
Enrolled in Federal Assistance Program		13		25%	
Rented Home		20		38.5%	
Food secure		45		86.5%	
Current Financial Status					
Financial Selectivity in Food Choice	3.52		1.18		
Enrolled in Federal Assistance Program		10		19.2%	
Residency Status					
Pre-COVID					
On-Campus		15		29.4%	
Off-Campus		1		2.0%	
Off-Campus with Parents		32		62.7%	
Other		3		5.9%	
During COVID					
On Campus		12		23.1%	

Off Campus	3	5.8%
Off Campus with parents	34	65.4%
Other	3	5.3%

Table 5

Cell Sample Sizes, Manipulation Checks, and Study Variable Means and Standard Deviations for Study 2

	Cultural Incongruent				Cultural Congruent			
	Growth Mindset		Fixed Mindset		Growth Mindset		Fixed Mindset	
Condition (n)	16		14		10		12	
Failed Manipulation Check	13		13		7		11	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Intentions	69.19	19.42	55.71	18.25	67.40	26.21	58.83	16.89
Cultural Congruence	3.12	.51	3.00	.66	2.93	.61	2.77	.50
Cultural Incongruence	3.41	.77	2.79	.72	3.17	.79	3.16	.75
Racial Centrality	4.97	1.03	4.74	1.23	4.61	.98	4.94	1.18
Nationalist Ideology	4.49	.95	3.91	1.15	3.96	.83	4.01	.84
Mindsets of Health	5.78	1.17	5.62	1.03	5.57	.77	5.05	.94

Note. N=52

Table 6

Hierarchical Linear Regression Predicting Healthy Eating Intentions with Racial Centrality as a Moderator

Study Variables	*B*	*SE*	*p*
Age	.35	1.11	.04
Gender	.18	5.48	.19
Past-Eating Habits	-.11	0.18	.49
Dummy-coded Subjective Norms	.01	5.89	.93
Dummy-coded Mindsets of Health	.32	5.35	.02
Racial Centrality	.07	2.57	.61
Subjective Norms X Racial Centrality	-.09	5.32	.63
Mindsets of Health X Racial Centrality	.08	5.33	.44
Subjective Norms X Mindsets of Health	-.06	11.21	.79
Subjective Norms X Mindsets of Health X Racial Centrality	.22	10.73	.33

Note. N= 52. Standardized coefficients are presented. Bonferroni adjusted significance, $p < .025$**

Table 7

Hierarchical Linear Regression Predicting Healthy Eating Intentions with Nationalist Ideology as a Moderator

Study Variables	*B*	*SE*	*p*
Age	.35	1.11	.04
Gender	.18	5.48	.19
Past-Eating Habits	-.11	0.19	.49
Dummy-coded Subjective Norms	.02	5.73	.89
Dummy-coded Mindsets of Health	.27	5.35	.05
Nationalist Ideology	.23	2.94	.11
Subjective Norms X Nationalist Ideology	-.03	6.26	.84
Mindsets of Health X Nationalist Ideology	.04	5.97	.19
Subjective Norms X Mindsets of Health	-.01	11.12	.95
Subjective Norms X Mindsets of Health X Nationalist Ideology	.24	1.08	.28

Note. N= 52. Standardized coefficients are presented. Bonferroni adjusted significance, $p < .025$**