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Boniface Noyongoyo

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Living Without My Foods: African Students' Eating Habits Compared to All in the United States of America

Boniface Noyongoyo
Marshall University

ABSTRACT

The current project measures international students' dietary acculturation challenges focusing on sub-Saharan Africans in the U.S. The analysis examines responses from 142 questionnaire respondents. Respondents filled out a self-administered survey that inquired about their eating practices in their country and since they moved to the U.S. Findings include the fact students choose their foods based on whenever and wherever they are available in markets near their locations and on time spent in the U.S. Newly arrived participants searched for already known produce. Meanwhile, those living in the U.S. for more than twenty-five months started the adaptation process through self-preparation-meals or reliance on the recommendations of others. Students from Africa increased their intake of standard American foods unlike those from their homeland, such as pre-made meals and sweets as well as caffeine containing products but reduced the foods they grew up eating. Sub-Saharan students tended to shift their eating patterns even when foods from their home countries could be purchased in groceries near them. The analyses demonstrate eating adjustment as a consequence of the period lived in the USA, personal relationships, and food preferences from their country of origin.
Keywords: international students, dietary acculturation, migration, Africa, eating habits

The count of international students traveling to the United States for school at a college or university over time is going up (Institute for International Education [IIE]., 2023). However, between 2018-2019 and 2019-2020, a decrease of approximately 1.8% of enrollment of international students in U.S. colleges and universities was observed compared to the previous time period (I.I.E., 2023). Although smaller in percentage compared to all international students in the U.S., the count of African students is increasing. A comparison shows the number of sub-

Saharan students who registered at academic institutions in 2021-2022; there were 42,518 students (4.5%) international students in the U.S. from sub-Saharan Africa) – the highest percentage in history in comparison to 39,061 in 2020-21.

In the literature some researchers, like Alakaam et al. (2015), and Mustafa et al. (2020) have reported cultural challenges resulting from changing from one milieu to another that could impact schoolwork and general health of international students. The steadfast increase of diverse expansion of international students at U.S. educational settings calls for investigation given the limited amount of resources about their lifestyles and perspectives. Some researchers specifically examined food consumption of African students in U.S. educational institutions. Gilbert and Khokhar (2008) discussed their experiences as part of the subgroup of Caribbean from Africa and West Indians. Landman and Cruickshank (2001) called participants "Black" (versus African and West Indian) in a study conducted in the U.K. while Perez-Cueto et al. (2009) explicitly examined geographical ancestry and birthplace when examining change of eating practices in Belgium. Renzaho and Burns (2006) examined students from sub-Saharan Africa living in Victoria, Australia.

More generally, fewer social scientists have studied the dietary intake of international students as part of cultural discovery and adaptation. Most work on students away from home is concentrated on *adaptational processes* that undoubtfully go hand in hand with experiences from different cultures because students learn to live in their new educational and residential environments (Alakaam et al., 2015; Barer-Stein, 1979; Berry, 2003; Cemalcilar & Falbo, 2008; Chiu, 1995; Church, 1982; Hechanova-Alampay et al., 2002; Mustafa et al., 2020; Sam & Berry, 2010; Shepherd, 2002; Smith, 2006; Wu et al., 2015; Ybema et al., 2009). By adaptational processes it is meant psychological challenges (stress plus coping) following arrival in a different society (Ryan & Twibell, 2000; Singh et al., 2022; Ward et al., 2001; Zaharna, 1989). Kim (1988) described intercultural change through which an individual goes in life that occur after first years of adaptation in a specific society and has to adapt into a new unknown cultural environment.

More broadly, this article examines international students' food consumption, focusing more on students from Africa as they culturally adjust (Kagan & Cohen, 1990), keeping in mind that they will move away from their culture of origin while getting closer to the new one, consistent with their previous socialization. It also examines the following questions: Are there any modifications in eating patterns and individualities that can be uncovered? Could transformations be similar for all international students or vary based on characteristics such as level of education, sex, and age? Are changes in food habits of students from Africa comparable to students coming from other countries or continents?

Background

There are many terms for food consumption that express objects eaten, the intake amount, the grade of the produce, its origin, processes of obtention, and preparation. Thus, diet is related to the socio-cultural environment in which it originated as well as the individual's religion, buying power, mental state, geo-political region, and

broader elements of society. The intersection of demographic characteristics of a person provides his or her social status and food practices.

Caballero et al. (2003, 1963) and Sanou et al. (2014) argue dietary patterns as standpoints and actions correlated to dietary practices. Food habits are the ways in which members of the society use the food supply in their environment (Lăcătuşu et al. 2019). de Garine (1987) thinks they provide unity to a society. Jastran et al. (2009) add that there are daily actions that are repetitive regarding liquids and solids as well as intake settings. Food habits and ordinary diet practices change across societies (Monterrosa et al. 2020). For example, in many parts of Europe, it is more common to eat at specific times daily with in-between-meal snacks. As a result, dietary patterns can open a path in understanding a society (Cleveland et al., 2009).

Health has been the main interest of much previous research in correlation to relocation and dietary patterns (Alakaam et al., 2015; Gil et al., 2005; Gilbert & Khokhar, 2008; Landman & Cruickshank, 2001; Leong 2015; Monterrosa et al. 2020; Mustafa et al., 2020; Papadaki et al., 2007; Renzaho & Burns, 2006; Sanou et al., 2014; Yan & FitzPatrick 2016;). Cortez and Senauer (1996), for example, reported a shift in preference after migration, income, and produce displayed in stores (people shopped for affordable instead of salutary foods). Perez-Cueto et al. (2009) found that 85% of foreign students in Belgium changed their diet. Raj et al. (1999), Leong (2015), and Uyen and Chambers IV (2020) corroborated the length of related change in dietary habits in the U.S.

Jastran et al. (2009) and Alakaam et al. (2015) discussed how transformations in diet are correlated to individuals' ideals driven by professional status and marital status. Those habits fluctuate based on life events. Food choices are a function of where they are available: campus restaurants offer options that may not be found in food places around town, even disregarding the moment at which food is served. Some cultures have specific meal components based on hours of the day. Adjustments throughout walks of life are arranged and designed based on individual objectives and standards (Alakaam et al., 2015; Nestle et al., 1998).

Researchers also reported that following immigration, Asian Indians in the U.S. had reduced intake of native meals composed of grains, greens and raised legumes, sweet drinks, cheeses, and American-like foods and beverages as well as Africans living in France (Almohanna et al. 2015; Calandre et al. 2019; Su 2003,).

Dietary Patterns and Social Status

Rasmussen (1996) demonstrated that it is possible to see unique particularities of a stratum in dietary intake among the Tuaregs in Saharan and sub-Saharan regions of Africa. Forka (2008) showed that eating is a bonding experience for the Guidars in northern Cameroon. Sobal (1998, 2005) underlined the magnitude of ways of life in determining food patterns and asserts that for individuals who share a meal, personalities are at play. de Garine (1987) remarked that individuals would choose less nutritious and healthy eats to display class.

Brown et al. (2010) claimed that food and food staples are a way through which international students have learned social practices and part of their origins making

dieting communal and personal. Along the line of the last point, Perez-Cueto et al. (2008) emphasized the meaningfulness of uncovering all aspects surrounding the sharing of a meal at any time and the social importance.

Food Patterns of Students from Sub-Saharan Africa

Although Sub-Saharan African international students originate from multiple countries, their food practices overlap more than one would think. Many countries within the region have common staples. Examples of foods before contact with colonizers included yams, cassava, sorghum, rice, millet, banana-plantain, and teff (Noyongoyo, 2011). People would hunt, fish, and eat farm animals and chickens to add amino acids in their diet. African agriculture produces many types of products like sugarcane, dates, cotton, coffee, cocoa, vegetables of various kinds, sesame, coconuts, cashew, and potatoes (Noyongoyo, 2011). All of those products are directly consumed without processes that alter their nutrient content. Barer-Stein (1979) argued that despite the diversity of tribes on the African continent, there are similar patterns that can be observed beyond the multiplicity of traditions (Calandre & Ribert, 2019).

Eating patterns below the Sahara Desert consist of multiple grains-like products (Flynn, 2005). In many parts of Tanzania, meals, for example, include something starchy, a dish of greens on the side that is more likely a type of "gravy/sauce." Validators, the starchy foods, are "ingredients that are so central to the composition of a meal that their presence defines the meal" (Flynn, 2005, p. 53).

In contrast, it has been argued that eating patterns in America share a lot of similarities with the expansion of identically ready-to-eat foods and places (Gabaccia, 1998; Ritzer, 2004). As per Gabaccia (1998), there is no food that could be tagged American statewide because ethnic foods such as bagel and pizza are now iconic, and ready-to-order foods as well as different types of Mexican-like dishes are cooked and served everywhere in the country although originating from a specific locality like New York or Florida.

THEORETICAL FRAMEWORK

As with empirical studies, theoretical accounts of transnational acculturation have been mostly psychological in nature (see Figure 1; Berry, 2003; Sam & Berry, 2010; Shepherd, 2002; Smith, 2006; Ybema et al., 2009). The two structural designs of adaptation in a culture, for instance, proposes multiple approaches depending on how one remains attached to country of origin and country of residence. Multiculturals using a *bicultural strategy* exhibited an elevated degree of connection with both localities; little determination with host and country of origin employed a *marginalized* approach; *integrated* individuals are those who identity with their current country with decreased country-of-origin and preferring country of origin to residential local is a *separated* stratagem (Berry, 2003). Each tactic improves the acculturation process by attenuating mental challenges that arise from migrating to a different society.

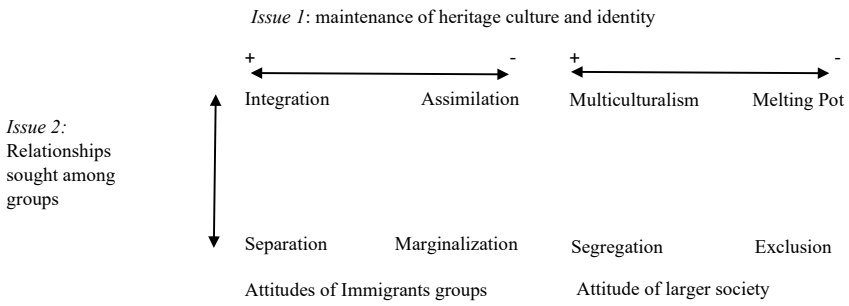

Figure 1: Acculturation Strategies in Ethnocultural Groups and the Larger Society (from Noyongoyo, 2011)

Reviewing Berry's models (2003) shows first, people who manifest a large degree of connection with both countries (where they are from and where they are living) go through less adaptational strain. In opposition, those displaying a loose connection with residence and place of origin present the top of adaptational strain. At the end, people with combined habits (i.e., those expressing a large place-of-residence, moving-away-from-place-of-origin personality or elevated-origin, small-current-locale individuality) present a middle-of-the-road adaptation strain.

More generally, *sojourners* on average feature multiple non-mental aspects connected to passage from one culture to another (Brislin & Yoshida, 1994; Hayes & Lin, 1994). Hechanova-Alampay et al. (2002) and Prieto-Welch (2016) affirm that sojourners go through a rollercoaster of emotions ranging from profoundly lost, intensely anxious and confused, through disappointed that preconceived realities about the current country are not confirmed, to feeling deeply isolated away from siblings, parents, and companions.

A similar range appears reflected in food choices. Shepherd's (2002) *food choice* scheme points out a few of the aspects, including price and availability, that may impact eating selection and intake. Meanwhile, Sobal's (1998) model comparing cultures, which places individuality at the center of the discourse for oneself, claims and presents different facets during multiple settings as corroborated by Ybema et al. (2009). Eating patterns are correlated to individuals' views and their upbringing (Almohanna et al., 2015; Mustafa et al., 2020; Sanou et al., 2014; Smith, 2006).

For Jastran et al. (2009), food practices are similar to daily habits in individuals' activities. Food patterns encompass what is eaten (legumes or protein), moment of the day (earlier or later in the day), geographical (on or off campus, restaurant, or home), tangible situation (sick or not, young or adult) and social settings (wedding, baptism, or funerals; Noyongoyo, 2011). Such practices are intertwined with individuals' lives for they reflect individual choices supported by what is known, penchant, and under consideration for food.

Thus, dietary patterns are mental depictions that allow people in their habitat to select and build their food habits (Jastran et al., 2009; Leong 2015; Mustafa et al., 2020). Bisogni et al. (2002) utilized constructionism coupled with grounded theory to elaborate a theoretical approach to personality regarding food. Theoretically speaking, eating patterns are tangible elements of a society that are as concrete and verifiable as other realities such as buildings, and they have information in their representation (Bisogni et al., 2002).

The Present Project

The goals of the current project were to examine insight about international students' food practices in the U.S. Food adaptation is part of cultural adjustment. Connecting dietary patterns to society and personality allows one to understand what reasons individuals use to shift their food practices thereby impacting their specific society in ways that, in the long run, could influence international eating habits. The specific community observed here is universities, colleges, and their surroundings.

Eating habits are connected to everyday events that follow each one that happened to be created by general society. Food habits are, spreading more through inevitable global exchanges that leads to a discovery of a multitude of edible products for people (Mennell et al., 1992). In the opinion of Caballero et al. (2003), the percentage of Americans who eat snacks has been steadfastly growing in the last quarter century (from 77 to 84%). People migrating to the U.S. are consequently more likely to transform their eating patterns by adopting local practices such as snacking and eating multiple un/healthy meals. How fast and how much transformation occurs could depend on and differ by where the person came from before living in the U.S.

More specifically, this project focused on the eating adaptation of international students, particularly African students. The connections created over a meal by individuals, the venues where they eat, and the motives of their actions constitute the goals of this research because they map out elements that influence the shift in dietary patterns.

To that end, the review of literature suggests multiple important points that are good forecasters of changing food patterns and how those patterns transform while individuals move from one society to the next. Lifespan, biological features, class, duration in current milieu, residence, and presence of home foods are key variables. It is important to study all actors, the place, the moment, the seriousness of the event and the patrons (Perez-Cueto et al., 2008).

Food adjustments are better understood through a comprehensive approach that uses interviews and surveys, which is the approach taken in this study, based on Berry's (2003) adaptation techniques and Jastran et al. (2009) who theorized an eating selection framework that can be used to capture the eating patterns of international graduate and undergraduates after their arrival in the U.S. and prior to their departure from their home countries, as well as their attitudes regarding foreign and locally produced goods.

Hypotheses

Several hypotheses can be drawn from the foregoing discussion. The following three research hypotheses were tested:

Hypothesis 1. There is a difference of eating patterns among students before coming to the U.S. based on their home country.

Hypothesis 2. Eating habits shift in connection to demographic characteristics, residency situation, duration in the current milieu, and accessibility to home foods.

Hypothesis 3. There is a correlation between continental origin and transformation of food patterns mediated by accessibility and dining options.

DATA AND METHODS

Data from a survey of international scholars in over two dozen of U.S. academic settings were used to test the hypotheses noted above.

Respondents

All students registered at educational settings in U.S. were allowed to answer the surveys. Partners who supported the recruitment were people in charge of departments managing international students and oral volunteers. International student organizations online and on campus helped in the recruiting process. A link to the questionnaire was included in the e-mail and an opportunity was given to participants who preferred a printed version to complete the questionnaire. Given expectations of a limited number of participants, effort was put in directly finding appropriate respondents due to the goals of the project (using a convenience screening approach).

The Survey

Questions on the survey asked about respondents' social traits and eating patterns beside adaptational path such as sex/gender, level of education, duration in the country, place of origin, faith, educational specialization.

Some questions asked respondents to express their pattern of choosing food and dietary patterns prior to living in the U.S. to report eating locations and shifts since arrival. Another section of the questionnaire focused on social personality and adjustment in the respondents' present environment. Finally, there were inquiries about the consequences of lack of accessibility to home foods on dietary patterns and relationships.

Variables

Personal traits encompassed the statistics such as sex (female or male), year of birth, year in school, place of birth in relation to continents. For the purpose of analysis,

"Mixcont" groups North and South American, European, and Australian were used as dichotomous measures.

Dietary habits were captured by asking respondents the number of times they consumed some foods prior to coming to the U.S. Another inquiry polled respondents about current consumption of different food types. The Likert-type scale coding gradually went from "Eat much less" to "Eat much more".

Food adjustment was measured through a variable built after running a factor analysis to measure a shift towards eating American foods. The foods that show adaptation to American eating habits are the foods that have a lot of sugar, are frozen, are sold in cans, went through oil, and between-meal snacks. Some items that are more likely to be found in Africa were coded to match other variables and they include yam and cassava. In the survey, yam referred to the true tuber as opposed to colloquial American use of "yam" to indicate sweet potatoes.

To check the shifts in accessibility of home foods, ability to buy home foods locally, and consumption-outside-of-residency foods, a few questions asked respondents about their habits. Accessibility of non-American foods was captured by inquiring if respondents could find their native foods in grocery stores around the current living area. Answers ranged from "never" to "always" in a Likert-type scale. The ability to regularly procure foreign foods was measured by asking how many times respondents purchased those foods in a thirty-day period. Multiple variables were created to measure how many times per month someone consumed some foods. Eating-out-of-one's-home compilation was created by asking how many times participants ate at specific locations (at home or at a dining spot) and by choosing in the range "never" to "every day" (Noyongoyo, 2011).

Many measures, such as duration in current location, captured from "as low as six months" to "over twenty-five months" among students. Questions about the influence of friends on dietary patterns collected information about relationships with other international students and people from the current country. Participants indicated who they spent a lot of time with on the range from 1 to 7 ("never" to "every day"). This question tracked the influence of other international students in their adjustment process. Participants also picked from a list of what influences them, with a selection among the knowledge about food procured, influence of friends or acquaintances, cost of nutritious foodstuff, and conditions in their personal ancestry related to diseases. Respondents decided which element was motivating or not. Analyses were conducted with all of those points.

RESULTS

The 142 students who completed the entire survey constitute the total *n* in the analyses although additional participants answered at least part of the questionnaire, yielding a 65% level of participation.

Characteristics of the Sample

Demographics show that most respondents were female (66% female compared to 34% male). Respondents aged between eighteen and forty-eight are grouped for the analyses into four categories with the first group aged 18 to 22 (34%), the second group aged 23 to 27 (41%), the third aged 28 to 32 (17%), and aged 33 and over (8%). Asian students made up almost 49% of the respondents while Africans were 16%, Europeans 15%, and Australians 2.8%. More than half of the participants (52.2%) were pursuing a degree beyond a bachelors. Fifty-eight of respondents lived in the U.S. for at least a quarter century compared to the newly arrived (under 7 months) who constituted 9% of the sample, while 13% lived in the U.S. between 7-12 months, 7% lived in the U.S. between 13-18 months, and 13% lived in the U.S. between 19-24 months.

Pre-U.S. Dietary Patterns

Diet prior to living in the U.S. was measured by asking participants the number of times they consumed foods on the list provided.

Central are the products eaten every week prior to the U.S. The other ones were *once a month* and *not once*, which represented peripheral eating items. Based on the second table, some items were part of every week's meals for all individuals in the sample such as juices, dairy products, rice, tea and/or coffee, sweets, red meat, chicken, potatoes, and fish.

As stated prior, there are items unique to particular categories. For instance, yam and cassava are weekly items for students from Africa compared to other students ($p < .01$). Other products ingested once or so per month by African students before moving to the U.S. includes juices and canned items ($p \leq .05$). Drinking alcohol for students from Africa and Asia was found to be significant ($p \leq .001$), a distinct difference when compared with other groups. Coming from Asia was correlated with a decreased amount of red meat compared to students from Africa and other regions of the world ($p \leq .01$).

Patterns of Foods Intake After Arrival in the United States

Five options on the initial survey were transformed into three to understand whether respondents ate less, as much as before coming to the U.S. or more. The results are presented in Table Two (Noyongoyo, 2011).

Table Two shows that coming to the U.S. led to changes that differed by continent of origin. The percentage of students from Africa eating cassava after coming to the country was 0%, the same percentage as those who ate yams. It also can be seen that intake of snack-like items between regular mealtimes went up as did fishy products, confections, in-can-ready foods, and convenience dinners. Respondents from the Africa and Asia consumed more poultry-related meals ($p \leq .01$). A remark can be made that the students from Africa had more alcoholic beverages and rice than other students in the survey ($p \leq .05$). There is also, as marked by many participants, a rise in intake of ready-made meals, tea, and coffee ($p \leq .01$).

Table 1: Eating Patterns Pre-U.S. (Contingency Tables[a])

Food Type	Africa			Asia			Mixcont*			Sig[b]
	Never	Monthly	Weekly	Never	Monthly	Weekly	Never	Monthly	Weekly	
Fruits and juices	.0	9	91	3	4	93	.0	5	96	NS
Fish	9	26	65	25	24	51	13	23	64	NS
Red meat	4	26	70	32	16	52	6	26	68	.003
Chicken	4	13	83	1	15	84	4	4	92	NS
Milk and dairy products	9	9	82	1	15	84	4	4	92	NS
Rice	.0	9	91	1	3	96	2	15	83	NS
Cassava	26	30	44	78	6	16	74	13	13	.000
Potato	13	35	52	9	26	65	.0	21	79	0.95
Yam	30	26	44	70	20	10	57	30	13	.001
Corn	9	41	50	28	46	26	28	26	46	.039
Soft drinks/ sodas	13	57	30	35	32	33	47	21	32	.027
Tea/Coffee	17	13	70	13	15	72	26	4	70	NS
Wine/Alcohol	65	17	18	78	10	12	30	15	55	.000
Snack foods	43	35	22	32	44	24	35	35	30	NS
Sugar and confectionary	4	30	62	15	17	68	15	33	52	NS
Packaged cakes and cookies	30	52	18	29	38	33	23	49	28	NS
Canned foods	61	26	13	68	20	12	38	30	32	0.16
TV (frozen dinners)	91	9	.0	86	11	3	79	13	8	NS

Note: Mixcont* designates the Americas, Australian, and European continent. [a] Those represent percentages (%). [b] Sig. (significance) was tested with Chi Square (Noyongoyo 2011).

Table 2: Eating Patterns in the U.S. (Contingency Tables[a])

Food Type	Africa			Asia			Mixcont*			Sig[b]
	Eat less	Same as home	Eat more	Eat less	Same as home	Eat more	Eat less	Same as home	Eat more	
Fruits and juices	56	9	35	48	25	27	64	15	21	NS
Fish	30	9	61	16	29	55	17	34	49	NS
Red meat	52	22	26	70	17	13	55	26	19	NS
Chicken	18	23	59	24	32	44	17	53	30	.059
Milk and dairy products	26	30	44	17	48	35	28	49	23	NS
Rice	13	43	44	51	33	16	40	34	26	.017
Cassava	78	22	.0	35	58	7	30	66	4	.001
Potato	35	35	30	12	40	48	45	32	23	.001
Yam	74	26	.0	39	54	7	30	45	25	.000
Corn	61	22	17	28	50	22	26	30	44	.002
Soft drinks/ sodas	57	8	35	48	24	28	64	15	21	NS
Tea/Coffee	30	26	44	25	26	49	15	57	28	.009
Wine/Alcohol	23	13	64	30	45	25	32	47	22	.004
Snack foods	9	17	74	16	26	58	11	23	66	NS
Sugar and confectionary	22	4	74	23	15	62	15	11	74	NS
Packaged cakes and cookies	30	26	44	39	36	25	36	32	32	NS
Canned foods	9	17	74	16	26	58	11	23	66	NS
TV (frozen dinners)	30	5	65	16	24	59	11	36	53	.035

Note: Mixcont* designates the Americas, Australian, and European continent.[a] Those represent percentages (%). [b] Sig. (significance) was tested with Chi Square (Noyongoyo 2011).

Factors Affecting Dietary Patterns After Coming to the U.S.

Accessibility, flavor of nutritional items, and procurement affects dietary habits. The first hint that predicts quality of diet was access to the items ($p \leq .01$). Accessibility to nutritional foods is a main concern for students from Africa (44%) and Asia (50%) in comparison to individuals from other parts of the world (29%) ($p \leq .001$). Knowing about the quality of foods was important to Africans (61%), Asians (42%) and 54% other students not from those two continents.

Things that discouraged almost all Africans was the costs of nutritional foods. Other respondents picked that the cost of items in stores highly influenced their buying selections. No category of international students stood out as influenced by friends or people they know. It seems though they were not willing to report friends' influence (48% for African students, 57% for Asian students, and 55% for other students). Influence of friends and other people did not qualify as key point impacting dietary patterns.

When it comes to purchasing home country produce, ranges were 1-4 with 4 representing "buying more than five times in a thirty-day period" and 1 representing "not at all". Sixty nine percent of respondents from Africa and 65% from Asia shopped more than twice a month compared to North and South Americans, Europeans, and Australians (43%).

The correlation analysis showed relationships between the discussed findings. The interrelationships are notable for multiple cases. The connection that eating adaptation has with home country is remarkable ($p \leq .05$). African students are more likely, and more quickly, than others to shift their eating patterns. Time lived in the U.S. is considerably intertwined with purchasing non-local produce. Participants who recently arrived are less likely to buy foreign items compared to those who spent more time in the country ($p \leq .05$). There were a lot of respondents from Africa residing in the U.S. for two or more years ($p \leq .01$). Analyses revealed that local products were cheaper than foreign items when they were found in shops ($p \leq .01$). Hence, the propensity to purchase and consume available imported food is significantly related with the price of these foods: the higher the price, the less likely students will purchase such foods. Despite all, more students from Asia bought foreign foods available in groceries stores compared to the rest of respondents in the study ($p \leq .05$). A greater proportion of participants aged 25 and more lived away from university residence halls compared to those who were younger ($p \leq .01$). Also, the former students were more likely to be graduate students ($p \leq .01$), have a greater likelihood to buy imported foods ($p \leq .05$) and a greater probability of having lived longer in the United States. ($p \leq .05$). Being Asian and educated had a remarkable connection which resulted in a higher proportion of students being from Asia and in higher educational settings in comparison to other international students ($p \leq .01$). Residing either on or off campus had a negative connection that could suggest that more non-male students lived in university residence halls ($p \leq .01$). The sample had a greater number of older (over 25) and in higher level of education respondents ($p \leq .01$), suggesting a positive correlation between age and level of education. The correlation between education

and sex suggests that, while there were more females in the sample (66.2%), a lower number of females were graduate students ($p \leq .01$).

Multivariate Analysis

There are six models in Table 3 that predict a shift in students' dietary practices. The first pattern considers ancestry in Africa and Asia—with the category Mixcont (Australia, Europe, and North/South America) as the reference category) – and the variable, access to foreign produce in groceries (available foods). The second simulation includes students' tendency to look for/buy imported native foods (purchasing foreign foods), while the third tabulation reveals the impacts of how long they have resided within the country (duration in the U.S.). Pattern four includes whether living on institutional facility or not (off/on campus), impacts dining. Pattern five omits length and place of residency variables. The model also controlled for the co-variables of access to imported foods in stores and African continent (Afrifoods) and the co-variables Asian and accessibility of imported foods (Asifoods). The last pattern checks for relationships between interaction terms and autonomous terms.

Table 3: OLS Regressions of Shift of Dietary Patterns retrogressed on Ancestry, Available Foods, Purchasing Foreign Foods, Duration in the U.S., On/Off Campus, Eat Out, and Co-variables (Noyongoyo, 2011).

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Africa	.329*	.344**	.324*	.329*	-.478	-.493
	(.155)	(.155)	(.160)	(.162)	(.385)	(.389)
Asia	.049	.078	.073	.071	.153	.138
	(.117)	(.118)	(.119)	(.120)	(.249)	(.252)
Available	-.117	-.117**	-.119**	-.120*	-.125	-.130
Foods	*	(.059)	(.059)	(.059)	(.089)	(.090)
	(.059)					
Purchasing		-.031	-.032	-.033	-.033	-.035+
Foreign Foods		(.022)	(.022)	(.022)	(.020)	(.020)
Duration in the			.018	.014	---	.011
States			(.038)	(.040)		(.036)
On/Off Campus				.043	---	.046
				(.132)		(.122)
DineOut					.073***	.073***
					(.018)	(.018)
Afrifoods					.397**	.400*
					(.171)	(.173)
Asifoods					-.022	-.018
					(.117)	(.118)
Intercept	3.675	3.713	3.655	3.640	3.065	3.002
Adjusted R^2	.035	.043	.037	.030	.186	.175

Note: Standard errors are in parentheses. * p<.05, **p.01, ***p.001, +.10

The results, from Noyongoyo (2011), reveal continent of origin to be a statistically significant predictor of changes in eating habits with respect to students from Africa. Except for results for Models 5 and 6, African origin has a positive and statistically significant effect on change in eating habits ($p = .05$ for Model 1, $p = .01$ for Model 2, $p = .05$ for Models 3 and 4). There is statistically significant proof that African students tend to change their eating habits to the standard American diet compared to those from Australia, Europe, and North/South America.

By contrast, being from Asia had no statistically significant effect on change in eating habits. Students from Asia are no more likely than students from Australia, Europe, and North/South America to change their eating habits to standard American diets. This finding was consistent across all six models.

Table 3 also shows that availability of imported native foods is a significant predictor of changes in eating habits. Apart from estimates for Models 5 and 6, estimates for that variable were all statistically significant ($p = .05$ for Model 1, $p = .01$ for Models 2 & 3, and $p = .05$ for Model 4). Unlike African origin, however, this relationship is negative: students are less likely to change their eating habits to the standard American diet whenever they can find products from their home countries on the shelves near wherever they live and shop.

Notably, both African origin and presence of imported home country foods in grocery stores near them became insignificant once the interaction terms are included in Models 5 and 6, suggesting that each of these two variables have statistically significant independent effects on change in eating habits. But, once interaction effects are controlled (Africa-food availability is the statistically significant estimate), the independent effects disappear. The interaction effect is capturing the independent effect of each of these variables.

Yet, the interaction estimates should not be dismissed offhand. They clearly indicate that dietary acculturation is greater among students from Africa than among all other students, which remains the case even when imported native foods are available in local stores. While the interaction between Africa and availability of African foods is significant, it is not between Asia and availability of Asian foods.

Taken together, results in Table 3 propose three key findings. First, African students have a greater tendency to change their eating habits to the standard American diet than other students. Second, the change in eating habits is influenced by the availability of imported native foods in stores. And third, African participants were quicker compared to the rest of respondents to transform their eating habits to the standard American diet holds even when imported native foods are available.

DISCUSSION

The goal of the current research was to measure dietary adjustment of international students in U.S. educational settings focusing on those from Africa now residing in the U.S., as compared with students from around the world. The answers collected from 142 respondents were scrutinized after the questionnaires were collected.

Three research questions were investigated. The first asked whether participants' dietary patterns (before coming to the United States) could be different based on their

continental root. The second examined whether changes in students' eating habits (after migration) depend on variables like ancestry, biological features, age, schooling, extent of U.S. residency, and foreign foods availability inside groceries. The third question explored ancestry role and dietary patterns as mediated through produce accessibility and going to eat at a restaurant or fast-food joints.

Results of the study indicate a complex pattern of relationships between eating habits and many of the selected demographics. Findings indicate that dietary practices before immigration to the United States did indeed vary because of ancestry, showcasing continental differences. Being a student from Africa was found to be a significant and consistent predictor of changes in dietary habits to a more standard American diet: increased intake of sweets, tea and or coffee, packaged meals, foods in can, and baked pastries.

As a result, multiple policies can spring from the current project. To start, findings of this study show how non-American, sub-Saharan scholars at diverse academic institutions throughout the country may be having adaptational challenges. These challenges may especially be due to the price of imported foods in local stores; but it may also be due to the absence of native foods in college/university cafeteria. Also, the rise in number of international students in educational settings call for the implementation of several practices that are not limited to (1) increasing business opportunities in the surroundings of the campus by having a grocery store that is willing to carry native foods from around the world that reflect the international student~~s~~ body on campus, (2) training campus advisors who are capable of understanding and discussing academics (perceptions of grade and relationships with teachers, for instance) and the mental and physical health of international students, in order to help the students perform better and be healthier. Given that although participating grocers may be able to offer native foods in groceries, there may be less chance for students to purchase them due to elevated costs, it may be helpful for the stores carrying those foods to be subsidized by the universities and colleges or the local city government. Consequently, to be an attractive institution for foreign students, educational settings can improve offered options of meals in college and university dining halls. In other words, foods could match the diverse population of people in educational settings. An option could be to have daily and or weekly dishes for specific regions, another could be a restaurant with diverse international menus, and lastly could be to have a chef dedicated to non-U.S. students. Another finding showed that students can cook, and they could therefore be involved in the menu planning and other changes that a university or college would like to make to show that the international students are welcome in their midst. All those processes could change the cultural diversity in the area, as well as academic diversity on campus, and provide an economic boost in the region given that international students pay higher fees.

More research can delve deeper in specific parts of international student life, like the influence of foreign foodstuff on students' educational performance. A question that could be answered is the importance that food plays in their abilities to do schoolwork. Those projects may sample a bigger population for a better understanding and comparison of participants from sub-Saharan Africa and other

international students in colleges and universities. Coping mechanisms (connection to locals and other students) that different student groups adopt on campuses may also be fruitful directions for future research.

Limitations and Consequences

There are limitations that prevent generalizing the findings of this project. Most respondents were from Asia with a small number of sub-Saharan African respondents. Moreover, data were based on convenience and snowball sampling, not random sampling, and thus may not be as generalizable as one might like. Finally, underestimation due to self-reporting by respondents is an important limitation.

Yet, results of the current study match previous findings that reported shifts of eating habits among immigrants (Alakaam et al., 2015; Almohanna et al. 2015; Cemalcilar & Falbo, 2009, Papadaki et al., 2007; Perez-Cueto et al., 2009; Sanou et al. 2014.) Su (2003) and Almohanna et al. (2015) observed similar patterns among Asian Indians in the U.S. that are very similar to what we found to be true for African students.

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Boniface Noyongoyo, PhD, is an Assistant Professor of Sociology at Marshall University in Huntington, West Virigina. He has conducted research on international students' eating habits as part of his interest in food and social inequalities. His

research suggests there is a deep connection between everyday food practices and academic life. His research interests include aging, life course, health, consumption and consumerism, international migration, race and ethnicity, sociology of food, and social inequality. He teaches Introduction to Sociology, Research Methods, and Statistics for Social Sciences. When he is not engaged in sociological research and teaching, Dr. Noyongoyo teaches French and Italian. Email: noyongoyo@marshall.edu