

INTERNATIONAL STUDENTS IN US COLLEGES AND UNIVERSITIES: EATING HABITS, CULTURAL IDENTITY, AND DIETARY ACCULTURATION

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“Food is not only good to eat, but also good to think with.” Levi-Strauss, *Symbolism of food: Mythologiques*.

“Tell me what you eat and I will tell you what you are.” (Anthelme Brillat-Savarin in *The Physiology of Taste*).

The aim of this study is to assess international students’ dietary acculturation issues with a focus on students of African origins in the United States. Responses of 142 participants from a survey that was sent out in spring 2011 are analyzed, supplemented with data from in-depth interviews conducted at that same time period. Participants aged 18-48 completed the self-administered questionnaire that asked about eating habits before and after moving to the U.S. We found that students from sub-Saharan Africa (16% of the sample) face more challenges in the U.S. than students from other origins. Results of the analysis suggest that food choices of international students, especially those from Africa, are guided by the availability of students’ native foods in local stores, as well as the time spent in the United States. Newcomers in the country tend to look for foods they know. However, those who have lived in the U.S. more than 25 months find ways to adapt by either cooking or relying on friends they find in the area. There

is an increase, especially among sub-Saharan African students, of items that are typical to American diet such as TV (frozen) dinners, packaged cakes, tea/coffee and a decrease in foods from their country of origin. Hence, dietary acculturation is a consequence of length of time, friendship ties, and availability of imported native foods.

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CHAPTER I – INTRODUCTION

An increasing number of international students enter U.S. colleges and universities every year (Institute of International Education 2010). Over the past ten academic years (2000-2001 to 2009-2010), the number of international students who enrolled in U.S. colleges and universities increased by over 26% - from about 547,867 students in 2000-2001 to about 690,923 students in 2009-10 (Institute of International Education 2010). Between 2008-2009 and 2009-2010, the number of international students who enrolled in U.S. colleges and universities went up by approximately 2.9% (Institute of International Education 2010).

One consequence of this increase is a greater likelihood for cross-cultural interactions both within campus and local communities. Cross-cultural interactions, in turn, have the potential of promoting transnational relations (Pedersen 1991) and “a diffusion of knowledge among cultures.” (Hechanova-Alampay, Beehr, Christiansen and Van Horn 2002:459). Broadly speaking, cross-cultural interactions have the potential of enhancing “a more homogenous and stable world where the best from each culture is integrated and synthesized” (Hechanova-Alampay et al. 2002:459).

Research suggests that persons with cross-cultural experiences are generally less ethnocentric, less prone to stereotypes, more tolerant, and possess a broader worldview (Adler 1975; Hechanova-Alampay et al. 2002). Such individuals also tend to exhibit “increased cognitive complexity and greater personal self-awareness, self-esteem, confidence and creativity” (Hechanova-Alampay et al. 2002:459; Church 1982).

Yet, “sojourners” also typically report a variety of negative psychological outcomes associated with cross-cultural transition (Brislin and Yoshida 1994; Hayes and Lin 1994). According to Hechanova-Alampay et al. (2002:459), sojourners experience “a profound sense of loss, intense feelings of anxiety and confusion, disappointment from having prior expectations

about the host country disconfirmed and a sense of isolation because of the alienation from family and friends.” They add that: “A sense of loss is particularly typical among adolescent sojourners whose still-developing identity comes from being with family and peers. Thus, they often feel lonely, less confident and more tense, take less time off and may behave dysfunctionally in the new cultural context.” (459).

It is not surprising that previous scholarship has focused on adaptational processes that inevitably accompany cross-cultural experience (Cemalcilar and Falbo 2008; Chiu 1995; Church 1982; Hechanova-Alampay et al. 2002). Kim (1988: 37-38) defines cross-cultural adaptation as “the process of change over time that takes place within individuals who have completed their primary socialization process in one culture and then come into continuous, prolonged first-hand contact with a new and unfamiliar culture.” In other words, a considerable amount of previous social science research has generally focused on psychological challenges (stress and coping) that come with moving into a new culture (Ryan & Twibell 2000; Ward, Bochner and Furnham 2001; Zaharna 1989). Yet there is more to be understood.

Previous research has also shown that adaptational difficulties arising from transitioning into a new cultural environment interfere with the overall academic success and well-being of international students (Chiu 1995). Thus, a sizeable portion of previous research on international students has also focused on adaptational processes that are experienced as students get acclimated to their new academic and cultural environment (Baker and Siryk 1986). Relatively few studies, however, have investigated food consumption as an acculturation process among international students. It can be argued, however, that food consumption can be an important medium of acculturation.

Also, as discussed above, much previous research on the topic of acculturation associated with international migration has been psychological in nature. That limited focus obscures several phenomena that a sociological investigation is bound to illuminate. For example, categorical differences clearly exist and need to be understood. Food preferences (dictated by country/culture of origin) may enhance or impede acculturation. Food products and preferences similar to those of the host country might be less of a hindrance to acculturation than those substantially different. Therefore, it is important to acknowledge the sense of community when it comes to ethnic cuisine.

Moreover, relatively few studies have investigated the eating habits of African students in U.S. colleges and universities. Some studies in Europe mentioned African students as a subgroup of a larger study: Gilbert and Khokhar (2008) talk about African Caribbean /west Indians; Landman and Cruickshank (2001) referred to “Black” as a general category in the United Kingdom; Perez-Cueto et al. (2009) considered continent of origin in their study on diet changing in Belgium; Renzaho and Burns (2006) looked at sub-Saharan Africans in Victoria, Australia. In comparison, there are many studies on Asian students largely done in Europe and in America.

While African students remain a relatively small proportion of the total number of international students who enroll in U.S. colleges and universities, the proportion of this particular group has also been on the rise. With the exception of Sub-Saharan African students, the number of whom decreased by 1.8% between 2008-2009 and 2009-2010, the number of African students in the United States has been on a steady rise since 2000. For example, the total number of African students who enrolled in U.S. colleges and universities in 2009-2010 was about 37,062. This number was an increase of 0.3% from the 2008-2009 academic year.

The steady increase in the size and composition of African students on U.S. campuses suggests that research on the academic and cultural experiences of this group is needed. As noted above, relatively few studies have investigated the acculturation experiences of international students from Africa. I am aware of no previous study that has specifically examined the eating habits of this group.

This project seeks to examine the eating habits of international students in the United States, particularly with respect to preferences and habits of food consumption, focusing on African students. In other words, the project will examine students' dietary acculturation in a broader context of cultural adjustment (Kagan and Cohen 1990), understood as a process in which there is the potential for dissociation from one culture to the other, and association with others with cultural backgrounds different from one's own. What changes in the eating habits and identities of international students in the United States might we observe? Are these changes uniform across groups such as males/females; undergraduate/graduate; etc.? Do sub-Saharan African students exhibit eating habits that are noticeably different from other parts of Africa? How different/similar are patterns observed among African students from those observed among international students from other parts of the world?

Below I first provide a background literature review for the study. I then describe the study and report its results. I conclude with practical/policy implications of the findings and suggestions for further research.

CHAPTER II - KEY TERMS AND CONCEPTS

Before proceeding with the discussion of this section, some key terms need defining. These terms are specifically defined here because they have been used differently in various contexts. And, while defining them, I also note the importance of each in turn to the current study.

Acculturation. Acculturation is a composed word that has culture as part of it. According to Ryder and Dere (2010:281), culture is the “situation of belonging to a given national group, a group with stable boundaries and a fixed essence”. Acculturation is a process of contact between cultures. It means the adaptation by an ethnic group of the cultural patterns of the dominant or majority group. And, it is not only limited to external traits like dress and language, but internal such as values and beliefs. Acculturation is therefore a process that implies contact between two cultural groups, resulting in various cultural changes in both parties.

The same term is referred to as ethnicity by the *Encyclopedia of Sociology* (2000). And in that sense, acculturation could be understood in four ways: assimilation, stratification, ethnic group resources, and accommodation.

1. As assimilation with a focus on social processes and outcomes that tend to dissolve ethnic distinctions leading to the assimilation of one or more ethnic groups into a larger or dominant group. In this sense, acculturation is the “process in which a minority is absorbed into the majority and entirely loses its distinctiveness” (Bruce and Yearly 2006:2). It is “cultural modification of an individual, group, or people by adapting to or borrowing traits from another culture” (Merriam Webster 2003:9). International students abandoning their home eating habits are in this category.

2. As stratification, acculturation is analyzed in its origins and consequences of inequalities of various kinds among ethnic groups. In that sense, Berry (2008) acknowledges the coming together of two cultures with a consequent transformation of the patterns in either or both cultures in interaction. Generally, there is a minority group and a majority group. The immigrant in a new milieu is in a position of minority. They keep their eating habits with co-nationals while they conform to the general diet in the host country. Sub-Saharan international students as a group are more likely to adopt the patterns of the host country because of the lack of availability of their native foods. Such students are also likely to consider their eating habits as marginal/distinct from the host country diet.

3. Acculturation is also considered in terms of ethnic group resources. It encompasses processes (mobilization and solidarity) by which members of ethnic groups attempt to use their ethnicity to compete successfully with others. The social constructionist perspective looks at ethnic boundaries that are malleable through how they are created, maintained, and transformed. An ethnic group is one whose members “entertain a subjective belief in their common descent because of similarities of physical type or of customs or both, or because of memories of colonization and migration.” Weber (2000:841) further clarifies by noting that “it does not matter whether or not an objective blood relationship exists.”

4. As accommodation, acculturation considers members of a group finding ways of co-existing with another without losing their defining characteristics.

Cultural Identity. Identity is a cognitive process that allows an individual to know, to accept, and to identify with a specific group. That process is a two way process. While the individual

constructs his or her identity within a specific group, the group also defines the person in the social process. Identity is knowledge that one has of oneself. In the case of eating habits, through socialization, individuals learn what to eat based on the patterns present in their society (de Garine 1980). Migration requires strategies of acculturation that are either to maintain one's original culture or integrate in the new one and acquire new identity. Cemalcilar and Falbo (2008) noticed that the first four months are challenging in terms of adaptation. Identity formation, therefore, is a bridge between personality and society, between "internal strivings and external prescriptions, between self-presentation and labeling others, between achievement and ascription and between regulation and resistance" (Ybema et al. 2009:301).

Scholliers (2001) observed that the very notion of 'identity formation' with its connotations of (self) perception remains absent in studying eating habits and identity. Fischler (1988) demonstrated the relationship between identity and food using what he called "integrative" approach, "integrative in the sense that there is a need to bring together the scattered images of biological man and social man" (277). Preparation, presentation, and choice of foods can serve as an expression of identity, providing a link between satisfaction of the basic need for nutrition and the social need for establishing a cultural self-image. Indeed, there is no cultural food by itself without a community geographically defined in time and space as an "eating community" (Mintz & Du Bois 2002:109).

Bisogni et al. (2002) used the constructionist perspective and grounded theory to develop a conceptual understanding of identity related to eating. Their typology describes society in change due to the fact that the migrants (i.e., international students) are bringing in some new perceptions, conceptions and behaviors that could affect the area they live in temporarily or permanently. The boomerang effect is the change in their eating habits and related problems

associated with that change. Research suggests that immigrants tend to maintain in time and space, as long as they can, their cooking and eating habits (Mennell et al. 1992). Nestle et al. (1998) have found that it is hard for immigrants to maintain a diet unique to their culture especially given the number of factors that affect the change from one environment to the other. Special occasions are moments for immigrants to remember and express some cultural practices. Gabaccia (1998:51) reported how some ethnic groups celebrate holidays. In this case, it is a Japanese family at New Year's Eve: "eggs for life, fish roe for fertility, black beans for health, micchi for strength, lobster for longevity, and red fish for happiness."

Eating habits. Changes in eating habits are related to culture, socio-cultural environment, period of time spent in a city, town or country (Pan, Dixon, Himburg and Huffman 1999). The term eating habits or food habits refers to what is eaten, the quantity consumed, the quality of foods, the ways that food is obtained and cooked and/or prepared. Eating habits are based on social, cultural, psychological, religious, economic, environmental, political, and individual factors. Caballero et al. (2003:1963) consider eating habits as "attitudes and behaviors associated with eating". For Guthe and Mead, food habits are "the way[s] in which individuals or group of individuals, in response of social and cultural processes select, consume, and utilize portions of the available food supply." Eating habits reflect the status of an individual if age, sex, social and economic status are taken into consideration. However, we should consider what the core of the diet is, what is secondary, and what is peripheral. Examples are respectively starch, meat, and sweets. During special occasions and festivities such as New Year's Eve, harvest, naming ceremonies, Christmas, weddings, and Funerals, diet is a combination of core, secondary, and peripheral with emphasis on servings. Those habits are not always rational with objectivity guiding choices, but rather, consequences of preferences, selection, acceptance, and

consumption. Meals are then reflections of eating habits in their number, size, quality, occasions, types, and likeness; as well as persons eating, and the culture to which they belong.

Eating habits are what de Garine called factors of social cohesion. There are also routine factors that, according to Jastran et al. (2009:129) are “both repetition in foods and drinks consumed and repetition in contexts for consumption”. Eating habits and eating routines can follow an African way with one main meal with snacks or a more diffused westernized way that requires three meals per day. Indeed, number of meals varies according to cultures. Some in Europe have three hot meals per day, some others have two and others only one. Among some, snacking replaces hot meals. Hence, beyond all, food habits are considered key factors that could open a gate to a culture (Cleveland et al. 2009).

A considerable number of publications on changes associated with migration and eating habits focus on health (Papadaki et al. 2007; Landman and Cruickshank 2001; Gilbert and Khokhar 2008; Gil et al. 2005; Renzaho and Burns 2006). Those studies were conducted in the United States on Chinese and Indian students. Cardiovascular diseases, diabetes, and obesity were found among participants in those studies.

Others, including Cortez and Senauer (1996) found change in taste related to location and availability of food. That change was also related to income for participants bought cheaper rather than healthier foods. The study of Perez-Cueto et al (2009) on international students in Belgium found 85% of the participants changed their diet following a temporal migration. Raj et al. (1999) found a change in dietary habits in relation to length of residence in the U.S.

Jastran et al. (2009) developed the idea that change in eating habits is based on people’s values, embedded in social structures such as school, work, and family. Thus, they could be changed depending on situations in life. Indeed, physical conditions would guide people’s food

choices as well as social settings (wedding or funerals). Location also dictates foods to be consumed: in a dining hall on campus choices are different from a restaurant in the city just as time of the day (generally speaking morning calls for breakfast and evening for dinner). All that changing process is life course constructed, and organized around personal goals and ideals (Nestle et al. 1998).

Among Asian Indians in the United States, changes in eating habits are summarized by Su (2003:2) as follows: “After immigration, Asian Indians in the United States had decreased consumption of traditional mixed dishes based on cereals, legumes, and/or vegetables, and increased consumption of fruit juice, chips, fruit, cheese, margarine, American bread, dry cereals, soft drinks, coffee, and alcoholic beverages”. That is to say, after immigration, Asian Indians in the United States had modified their diet, adopting new habits that were more common to where they were living.

Kolodinsky et al. (2008) noticed convenience in dining halls on campuses especially towards the end of the semester when students have not enough money to buy foods that are healthier. Hence, there are values on one hand and, on the other, practical consideration such as time constraints.

Eating habits and social class

Rasmussen (1996) argues that class-based notions of differences are expressed in food and eating in Tuareg’s culture. For Forka (2008), food is a linking device as he found among Guidar in Cameroon. Sobal (1998, 2002) recognizes the importance of culture in shaping eating habits and argues that for people who eat together it is a way to enact their identities. De Garine (1980) observed that some people can eat foods with fewer nutrients just to achieve social status.

Brown (2010) argued that food is a vehicle of socialization among international students as it is an important aspect of their origin. Hence eating is both social and individual. In that sense, Perez-Cueto et al. (2008) stressed the importance of studying who is eating with whom, where, when, why, who is inviting and what is the formality used. Eating habits are related not only to social class but also to work and family (Jastran et al. 2009).

Eating Habits of Sub-Saharan African Students

Sub-Saharan African international students come from diverse backgrounds but they share a lot of eating habits and products in common. The area is known for producing staples that are generally common to countries within the region. Pre-colonial staples are yams, cassava, sorghum, rice, millet, banana-plantain, maize, teff, groundnuts, and melon seed. Protein was provided by hunting, fishing, and domesticated animals like goats, sheep, and poultry. Other agricultural products are sugarcane, dates, cotton, coffee, cocoa, palm oil, and sugar, vegetables of various kinds, sesame, beans, coconuts, bananas, timber, barely, tea, wheat, citrus fruits, cashew, sweet potatoes, and potatoes. Eating habits are based on staple foods that are locally transformed rather than processed in facilities. And, many of these food products remain staples in much of the regions. Barer-Stein (1981:16) affirms: “although there are many ethnic groups in Africa, it is possible to make some generalizations in regard to the foods and food customs.” Foods share validators that are “ingredients that are so central to the composition of a meal that their presence defines the meal” (Flynn 2005:53). Meals, like the labor of the fields, are marked by the rhythms of rainfall and harvests’ dates. Contemporary sub-Saharan African diet is very starchy (Flynn 2005). In a Tanzanian meal, for instance, validators are one starch, a relish of mboga (vegetables) for accompaniment and preferably mchuzi or “gravy/sauce.” Food

preferences are regional and depend on traditions in any given region. Starch for instance is not the same for a Congolese or a Cameroonian.

Similarly, some argue that the American diet has become more homogenized, particularly with the popularity of fast food and franchise restaurants (Gabaccia 1998; Ritzer 2004).

According to Gabaccia (1998: 225) : “With bagel changing from a distinctively Jewish icon to a national fast food, and the proliferation of Tex-Mex, New York deli, and “new Florida” creoles, Americans have no single national cuisine.” Coming from different socio-cultural backgrounds, international students enter into this cultural diversity and the accompanying variety in foods.

Other scholars argue that the U.S. had some historical connections with eating habits brought by settlers. Southwestern states are strongly influenced by Mexican and Spanish cookery, southeastern states by French and Spanish (sauces and roux), eastern Seaboard States by Dutch, Swedish, Quaker, and German settlers (Bern-Stein 1981).

Stern and Stern (2008) enumerate some of the dishes that remain associated with some regions: Sponge Candy (Buffalo, NY), Green Corn Tamales (Tucson, Arizona), White Clam Pizza (New Haven, CT), Cuban Sandwiches (Tampa, FL), Date Milkshake (Southern California), Indian Pudding (New England), Five-Way Chili (Ohio). We can add wild rice (Minnesota), Cheese (Wisconsin also known as America’s Dairyland), Sauerkraut (Milwaukee), Chicago-style deep dish pizza (Illinois), crawfish and Gumbo in Louisiana (Brown and Mussell 1984).

CHAPTER III - THEORETICAL FRAMEWORK

This study seeks to expand the knowledge regarding eating habits based on information from international students who study in the U.S. Dietary acculturation is considered as a form of acculturation. Understanding eating habits related to culture and identity will aid in seeing why people change their habits and therefore influence the local culture, which in turn might affect the global culture of food consumption. By local culture, the focus is on the campus and the community involved with the campus life.

For Mintz (1985), food consumption is related to changes in daily life schedule, which is in turn a product of societal composition and structure. Increasing globalization also inevitably means greater exposure to a wider variety of foods (Mennell et al. 1992) and eating habits. Caballero et al. (2003), for example, recently found that the proportion of U.S. residents that engage in between-meals snacking has increased substantially in the last twenty-five years (from 77 to 84%). Migration to the United States, therefore, may mean change in dietary habits (i.e., number and quality of meals and or snacks). The speed and extent of such change may also vary by country/culture of origin.

The two-dimensional model of acculturation, for example, suggests four adaptation strategies based on degree of identification with home and host countries (see Figure 1). Transnationals employing a “bicultural strategy” show high levels of home and host country identification; those having low identification with both home and host culture are said to utilize a “marginalized” strategy; those with high host, low home identity are said to employ an assimilated strategy and those with high home, low host identity exhibit a “separated” strategy (Berry 2003). The implication is that each strategy either enhances adaptation by reducing psychological stresses associated with moving to a new culture, or does the reverse.

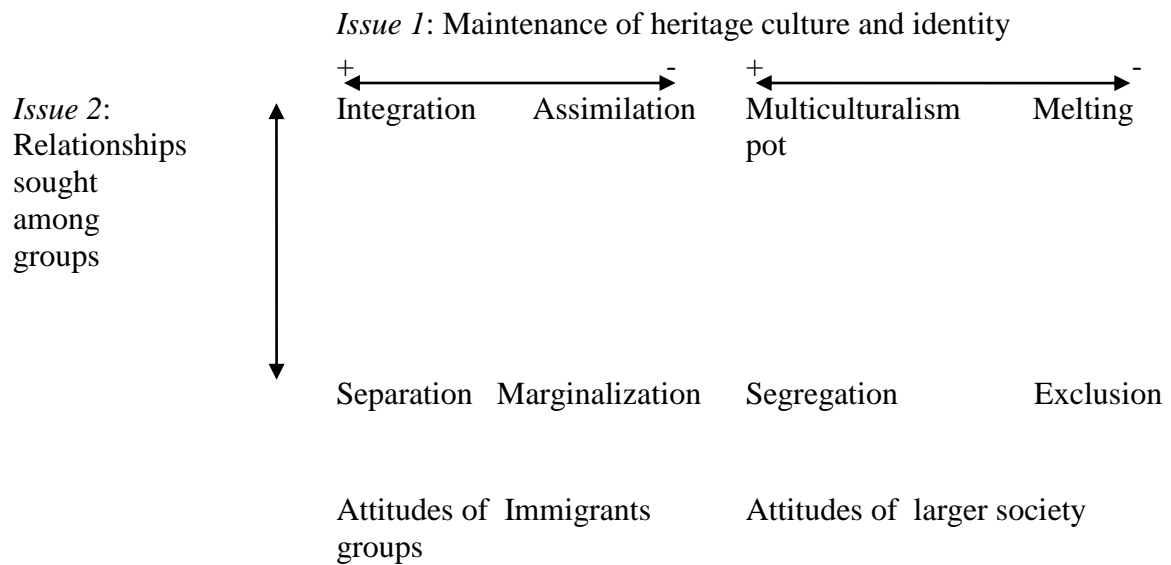


Figure 1. Acculturation strategies in ethnocultural groups and the larger society. Adopted from Sam and Berry (2010: 366)

Berry's (2003) review of studies based on the two-dimensional model of acculturation as such came to three key conclusions. First, individuals exhibiting high levels of home and host identification (those adopting a "bicultural strategy") experience the lowest acculturative stress. By contrast, those exhibiting low identification with both home and host culture (those adopting a "marginalized strategy") experience the highest acculturative stress. Finally, individuals with mixed patterns - those exhibiting high host, low home identity (assimilated) or high home, low host identity (separated) - are shown to have intermediate levels of acculturative stress.

The concept of eating routines had been developed and used by several researchers. Jastran et al. (2009) consider them like other forms of routines in people's life such as school, work, family, etc. Eating habits therefore, include type of foods (vegetables or meat), time (morning or evening), location (on or off campus, restaurant or home), physical condition (sick or not, young or adult) and social settings (wedding, baptism, or funerals). Those habits are embedded in people's lives as well and they mirror personal preferences based on knowledge, taste, and value of diet (cognitive values).

Jastran et al. (2009) concurred with the idea that food choice is a cognitive process in which individuals given the environment choose and construct their eating behaviors. People are likewise adaptable and reflective about their routines and identities. Moreover, eating habits could influence other life's structures like picking up coffee on the way to work, studying, eating while driving, etc.

Shepherd's (2002) "Food choice Model" identifies some of the factors that might influence food choice and consumption. Among them, there are price and availability, social or culture related food choices. Similarly, cultural comparison design (Sobal 1998) considers identity as a "matter of claims, not character; persona, not personality; and presentation, not self." (Ybema et al. 2009:307) Food choices are based on people's perceptions and their socialization (Smith 2006). Beyond all, food habits are part of a material culture. Based on material culture theory, eating habits are tangible and or visible everyday life facts that carry messages in their roles (Bisogni et al 2002).

The focus of the current study is dietary acculturation of international students, specifically those from sub-Saharan Africa. Therefore, it overlooks international students' organizations, as they are many groups with different interests on various campuses and in-depth analyses of health consequences. However, the relationships between people eating together, the sites they use to go eat, and the reasons of their behaviors are part of our interest as it helps to figure out the actors and actresses of the change.

And, as the above review indicates, eating habits are based on social, cultural, psychological, religious, economic, environmental, political, and individual factors. In that context, several key variables can be identified as specific predictors of eating habits and how such habits might shift over time as people move from one culture to another. Among these are

age, sex, social and economic status, length of residence in host country, location and availability of foods, among others. Perez-Cueto et al. (2008) also stressed the importance of studying who is eating with whom, where, when, why, who is inviting and what is the formality used.

Using a mixed method (quantitative and qualitative), we will draw from Berry's (2003) acculturation strategies and Jastran et al's. (2009) food choice model to better understand international students' dietary acculturation in the U.S. Those two perspectives will help us to grasp not only changes before and after moving to the U.S. but also international students' perceptions and behaviors towards imported foods and local foods. Thus, we will understand degree of dietary acculturation.

Hypotheses

As discussed above, I expect certain associations between eating habits, change, cultural identity and dietary acculturation. For the purpose of this study, I offer three hypotheses:

Hypothesis 1. I expect that students' eating habits (prior to moving to the U.S.) will differ by continent of origin (Africa, Asia, ...).

Hypothesis 2. I expect that changes in students' dietary habits will be a function of continent of origin, sex, age, level of study/education, length of stay in the USA, availability of imported food in stores, tendency to buy imported foods, and whether students live on or off campus.

Hypothesis 3. I expect that the relationship between continent of origin and change in eating habits will be explained by food availability and eating out (at restaurants, dining halls, and fast foods).

CHAPTER IV – DATA AND METHODS

Collection of the data started after completion of the IRB Human Subject Approval (See Appendix A). We used a survey and in-depth interviews. Questionnaires were sent out via e-mails and hard copies were handed out to international students at colleges and universities during spring 2011.

Participants

Participants were students enrolled at their colleges or universities--students who have come to the U.S. for schooling. Research participants were selected through offices of international students/affairs, student organizations and word of mouth. Campus offices of international students are the first point of contact for international students. Thus, such offices helped us with initially contacting the students (See recruitment emails—Appendixes B and C). International student clubs are likewise a social contact point for students and were helpful for participant recruitment. I used the list-serves of such organizations to send a message asking for participants. Within the message, a link to the survey was incorporated so that those who wanted could take the survey at their convenience. Thus, the survey was completed online or on paper.

Those who met the following “minimum” requirements were further selected for interviews: having no meal plan, living off campus and having lived in their current city of residence for at least three months. Some students in the target sample meeting these requirements were interviewed. Their opinions were integrated to supplement the statistical analyses. Because I anticipated my target sample to be very small (and because of time and financial constraints), convenient sampling was the primary mode of locating research participants.

Questionnaire development

A structured questionnaire available in English was developed to measure demographics and changes in food patterns, as well as level of acculturation (See Appendix D). The demographic characteristics included sex, age, continent of origin, population group, length of stay in the USA, religious preference, years in school, and areas of study. One section of the survey had questions about participants' selection of food and eating habits before moving to the U.S. That section also included places where students ate, and changes made in the diet since moving to the U.S. Another section focused on cultural identity and adaptation in the new area. Questions were also asked about the impact of absence of imported food on eating habits, and friendship ties.

Data analysis

Responses were imported into Statistical Package for Social Sciences (SPSS) for analysis.

Interviews were conducted on campuses. The interviews serve as examples in the discussion section of the paper. Before using the data collected from the interviews, a preliminary selection of opinions was done. Quotes from participants are included in the discussion.

Variables

Demographic variables included in the analysis are: sex (female or male), age (in years), education (level of formal education: undergraduate or graduate), continent of origin (Africa, Asia, Australia, Europe, North/South America). The term "Mixcont" refers to North/South America, Europe, and Australia in a dummy coded variable.

To measure eating patterns, one question asked participants to note how often they ate certain types of foods before moving to the U.S. For the other question, participants were asked to report to which extent they currently eat certain types of foods. The items were coded and ranged from 1= “Eat much less” to 5 = “Eat much more” (See Appendix D). A dependent variable measuring change to a more American diet over time was created after a factor analysis and reliability test. The goal is to test international students’ dietary acculturation. The factor analysis indicated that items which reflected the American diet were soft drinks/sodas, fried foods, sugar and confectionery, TV (frozen) dinners, canned foods, packaged cakes and cookies, and snacks. The items yam and cassava were reverse recoded to be put in the model so that decrease in consumption of these foods correlates with a more American diet. That was done to match the factor analysis because keeping them in their initial coding would have given difficulties in interpreting the results in the analysis. The variable then has nine items which were averaged with an alpha reliability of .739.

Control variables are availability of imported food in stores, buying imported foods, and eating out. Availability of food from home was measured by the question: “Do you find imported food from your country in stores near you?” Responses were coded from 1 = “Never” to 5 = “Always.” “How often do you buy imported food in a month?” assessed the frequency of buying imported foods. An ordinal variable was then created for the analysis with number of times ranging between 0/never and 20 times per month. A scale variable for eating out was created from the question “During the last month, how often did you eat in each place?” Listed places were restaurant, fast food restaurant, and dining hall. The response categories ranged from 1= “Never” to 7 = “Daily”.

Other variables of interest are length of residency in the U.S., for which participants were requested to state how long they have been living in the country. A variable of length of residency was created with participants' responses. The categories were between 1= 0-6 months and 5= 25 months or more.

Peer group pressure is an important factor that impacts eating habits. The variable encompasses two aspects. The first covered the interaction with either other international students or host country friends. The attributes of that question, "indicate with whom you hang out/associate more often" were ranged from 1="Never" to 7= "Daily." During their adaptation, students may have followed the advice of international friends or nationals. The second aspect was asking participants to tell from their experience what impact has the list of factors that were given. Among the factors, there were peer pressure, media information (reporting on nutrition/healthy foods), higher price of healthy foods, and health history in the family. The response categories for each of those factors ranged from 1= "very discouraging" to 5 = "very encouraging." Those factors were then treated as variables for the analysis. Also, responses were recoded into 1 = discouraging, 2 = neutral, and 3 = encouraging.

CHAPTER V – RESULTS

Two hundred and forty seven international students around the country completed the survey (a response rate of 65%). Of that total, 142 had sufficient item-level responses and thus these respondents constituted the study sample.

Characteristics of the sample:

As can be seen in Table 1, the majority of the participants are female (66.2 %), as compared with males (33.8%). The range of ages is between 18 and 48. For the analysis, ages were grouped into categories: 1=18-22, 2=23-27, 3=28-32, and 4=35 or more. Participants from Asia constitute the majority of the sample (48.6%) as compared to international students from Africa (16.2%), from Europe (15.5%), from North/South America (14.8%), and from Australia (2.8%). Graduate students constitute 52.2% of the sample as compared with 47.2% undergraduates. More than 57% of the sample lived in the U.S. for 25 months or more.

[Table 1: About here]

Food consumption before moving to the U.S.

The question measuring home foodways was “How often did you eat the following before moving to the USA?” The answers had seven labels ranging from 1= Never, 2 = Less than once a month, 3 = Once a month, 4 = 2-3 times a month, 5 = Once a week, 6 = 2-3 times a week, and 7 = Daily. To analyze responses in a manageable manner, responses for categories 1&2 were collapsed into “Never/rarely” (1), 3&4 into “Monthly” (2) and “Weekly” (3).

[Table 2: About here]

Foods consumed weekly before moving to the U.S. are considered core foods. Foods consumed monthly are secondary and those never/rarely consumed are peripheral to the diet.

As can be seen in Table 2, certain food categories were consumed weekly by students from all continents of origin: fruits, juices and vegetables, milk and dairy products, rice, tea and/or coffee, sugar and confectionery, red meat, chicken, potato, and fish. Consistent with Hypothesis 1, however, some foods are clearly unique to some groups, and not others. For example, foods consumed weekly by African students (in contrast to the other groups) include cassava and yam ($p < .10$). Food items that were consumed less frequently (monthly) by African students prior to migration include soft drinks/sodas and canned foods ($p \leq .05$). The item wine/alcohol stands out for Africans and Asians in terms of never/rarely consumed ($p \leq .001$). Africans and other continents ate more red meat than Asians ($p \leq .01$).

Changes in food consumption since moving to the U.S.

The response categories 1 = Eat much less, 2 = Eat less, 3 = Same as at home, 4 = Eat more, and 5 = Eat much more were recoded for the analysis into 1 = Eat less, 2 = same as at home, and 3 = Eat more: responses 1 and 2 were recoded into a “eat less” category (#1 in Table 4), 3 was “same as at home” (#2 in Table 4), and responses 4 & 5 were recoded into “eat more” (#3 in table 4).

As can be seen in Table 3, consistent with Hypothesis 2, since moving to the U.S., there is a decrease in the consumption of fruits, juices and vegetables, fish, red meat, and soft drinks/sodas among all international students. Notice that the proportion of African students who reported eating cassava more since moving is zero (compared to 44% that ate it weekly before moving--see Table 3). The proportion of those who eat more yams is also at zero (compared with 44% that ate it weekly before moving). A similar pattern is shown for corn.

Looking at Table 3, it is also clear that there is a general increase in the consumption of certain foods among all groups, since moving to the U.S., including fish, snack foods, sugar and

confectioneries, canned foods, and TV (frozen) dinners. For Africans and Asians there is an increased consumption of chicken ($p \leq .10$), and only for African students, the consumption of wine/alcohol and rice ($p \leq .05$). There is also increase in consumption of TV (frozen) dinners and tea/coffee ($p \leq .01$).

[Table 3: About here]

Factors affecting eating habits:

Some factors affecting eating habits are availability of foods, taste of healthy foods, and buying foods. Hence, availability of foods is the best predictor of healthy eating among factors affecting eating habits ($p \leq .01$). Availability of healthy foods seems to be a more important factor for Africans (44%) and Asians (50%) than students from other continents (29%) ($p \leq .001$). On the other hand, media information (reporting on nutrition/healthy foods) seems to be an encouraging factor for a greater proportion of all groups (61% for Africans, 42% for Asians, and 54% for students from other continents), although there was no significant difference across continents. Health history in the family has the same importance for Africans. Factors such as higher price of healthy foods were selected as discouraging by 83% of African participants. Students from other continents also indicated that prices seemed high.

With respect to the effect of peer pressure on healthy eating habits no group stands out. A greater proportion of all groups indicate a neutral response (48% for Africans, 57% for Asians, and 55% for students from other continents). Peer pressure therefore, is not a factor affecting eating habits.

For the variable buying imported foods, the values range from 1 = never/rarely, 2 = 1 to 4 times a month, and 3 = 5 or more times a month. Since moving to the U.S., a higher percentage of

African and Asian students (69% and 65%, respectively) indicated buying imported foods one to four times a month, compared with students from North/South America, Europe, and Australia (43%). About 53% of students from other continents never or rarely bought imported foods.

Table 4 displays correlation between the variables noted above. These variables are used as relationships of change in eating habits in the multivariate analysis below.

As can be seen in Table 4, the correlation matrix shows significant relationships between several variables. Most notably, there is a significant positive relationship between dietary acculturation and continent of origin ($p \leq .05$). Students from Africa were more prone to change their diet than students from other continents indicating a faster dietary acculturation among this group. Length of residency is also significantly associated with buying imported foods.

Participants who lived longer in the U.S. were more likely to buy imported foods than those who just got into the country ($p \leq .05$). In the group of participants who were in the country for more than twenty-five months, the proportion of African students was high ($p \leq .01$). Results also showed a correlation between high prices of imported foods compared to other local produce when they were available in stores ($p \leq .01$). Even so, Asian students in the sample were more likely than participants from other continents to buy imported foods when it is available ($p \leq .05$). Participants who were 25 or older were living off campus in comparison to those who were younger ($p \leq .01$). At the same time, those students were graduate students ($p \leq .01$) with a lot more freedom to buy imported foods ($p \leq .05$) for they have found stores after living for a while in the U.S. ($p \leq .05$). There is a significant positive relationship between being from Asia and education. There were more Asians in high level of education than other participants ($p \leq .01$). There is however, a significant negative relationship between sex and living place. Among the respondents, more females lived on campus than males ($p \leq .01$). In general, there were more

graduate students in the sample who were as said earlier more than 25 years old ($p \leq .01$).

Education and sex are inversely correlated as we found that there were more females in the sample (66.2%) but a few were graduate students ($p \leq .01$).

[Table 4: About here]

Multivariate analysis

Table 5 presents results of five models controlling for several variables as predictors of change in students' eating/dietary habits. The dependent variable is dietary acculturation that was described earlier in the variables section. Model 1 controls for the variables continent of origin (Africa and Asia) and availability of imported foods in stores (Foodav). Model 2 adds to those variables effects of buying foods on dietary acculturation (Buyfood), while Model 3 adds length of residency in U.S. (Lresid). The fourth model adds place of residence (off or on campus as Livplace), while the fifth model controls for the effects of eating out (Eatout) and the interaction of Africa and food availability in stores (Afrifood) as well as interaction of Asia and food availability (Asiafood). Model six controls for all of the independent variables.

As can be seen in Table 5, results of Model 1 indicate that the demographic variables (Africa and Asia) and availability of imported foods in stores explain 3.5% of the variation in dietary acculturation. That model confirms that dietary acculturation is associated with continent of origin (Africa). The difference between Africans and those from continents other than Asia is .329 in dietary acculturation ($p \leq .05$). Throughout the six models, the significant positive relationship between continent of origin and dietary acculturation remains in four models. The relationship changes when there is an interaction effect of the availability of food and Africa or Asia controlling for covariates. Results therefore, suggest that food availability impacts more sub-Saharan African students than students from other continents ($p \leq .01$). It also indicates that the more available foods are, the more likely African students are to change their diet. On the other hand, the same interaction has different effect on buying. Indeed, buying imported foods becomes significant when there is interaction of Africa and/or availability of foods in stores ($p \leq .05$). We could say therefore, that decrease of imported foods increases by .397 the dietary

acculturation of sub-Saharan African students. Across models, availability of foods remains negatively significant in four models with coefficients ranging from $-.117$ in the first model to $-.120$ in the fourth model ($p \leq .01$). Introduction of interactions made insignificant the coefficients in models five and six. The introduction of the interactions increases the probability of buying imported food in model six ($p \leq .10$). It indicates that students are more likely to buy imported foods when they are available. However, availability of foods does not restrain participants from eating at restaurants, dining halls, and fast foods ($p \leq .001$). Controlling for covariates, eating out accounts for $.073$ change in dietary acculturation ($p \leq .01$). In fact, there is no other significant relationship among other variables (in the OLS).

[Table 5: About here]

CHAPTER VI – DISCUSSION

In general, the analysis showed that participants are well aware of nutritional facts. Likewise, the students interviewed were knowledgeable of healthy eating habits. Interviewees expressed it in the following way:

- “I know that an average adult male should have 2000 calories daily with at least 50 grams of proteins”.

However, as some researchers have pointed out, the average person knows less about ingredients in processed foods even though there is nutritional information on products sold in stores (Fischler 1988). Though, some people base their choice on nutritional facts to make healthy choices, a majority does not put into practice their knowledge dining out. The difference between knowing and not using the knowledge is expressed by business journalist Rexrode in The Associated Press (2011): “Americans talk skinny but eat fat”. As mentioned, there is a gap between knowing and doing.

Change in diet

Results indicate changes in dietary habits were associated with continent of origin (Africa). Eating routines brought from their home country gradually changed allowing students to adapt in the host country. Cultural identity was still carried through daily life. Eating habits before moving to the U.S. are connected after immigration to area of origin. Indeed, Indians and African students had identified foods such as yam, cassava as daily goods. When they are also found in stores, they tend to be expensive for participants. The quests for those two items by sub-Saharan Africans may be related to an increase of homesickness. It is reflected by the attitude of

some interviewee who by mentioning home foods thought that it brings sadness and makes them miss home and friends even more.

Our participants acknowledged the difference in diet before and after moving to the U.S. The changes showed a predominant diet favoring American diet. Students' new diet, based on the created scale, was dominated by consumption of sugar and confectionery, tea/coffee, TV (frozen) dinners, canned food, packaged cakes and cookies. Those foods are associated with American diet. There is therefore, a general trend of dietary acculturation among international students. However, sub-Saharan students are more likely than other international students to change their traditional diet. One interviewee affirmed: "Here, I eat what is available in the dining hall." After living on campus for a year, this respondent decided to move off campus so that he can manage his diet.

There are some differences between survey takers and interviewees. Since coming to the U.S., some interviewees have increased their intake of cooked or raw vegetables. An interviewee affirmed: "I have more steamed vegetable and rice." However, facing the changes, international students developed different strategies to keep up with their traditional diets. The most common strategy is to buy and cook like that done in their home country as shown by the following comments:

- "[I] try to cook food according to as my taste and make things available for cooking"
- "[I] shop at African food stores"
- "[I] buy items at import store, cook/bake it in a traditional way"
- "I cook food at home as I would have eaten at home."
- "[I] make home food myself"
- "[I] learn to cook the way food is cooked back home"

Some participants explored alternative ways of cooking like stated by this other interviewee: “I cannot eat my food so the only thing I do is buy fruit and nuts to keep in my room. When at the cafeteria on campus, I try to always choose the vegetarian dishes (the only ones they cook at the moment with your choice of vegetables).” Another said about foods: “I smuggle them from home every two years.”

When possible, friends and relatives provided some traditional foods. Interviewees shared: “Eat at friends’ house”, “Ask my parents to send food from home” Adaptation is a good strategy to eat home foods. One interviewee said: “Eating something what is available similar to my home country food” and the other concurred: “Look for local alternatives.” Thus it appears that to the extent peer pressure matters, it encourages students to maintain their home foodways.

Availability of food and diet

Availability of imported food impacts international students eating habits as 54% of students reported availability of food discouraging. Some of the international students (31%) affirmed to be “a little” impacted by not finding imported foods they are use to in the stores near them. Consequently, diet is positively related to what is sold in stores (hypothesis 1). Results showed that Sub-Saharan students are affected by the absence of food items they are use to before coming to the U.S. Also, products that constituted their diet are not often found in stores or they are expensive. Because of the high price of imported foods, participants prefer to buy local foods. Those findings are similar to Mintz’s (1985) study of working class eating habits. He found that the high price of butter led people towards jam that was cheaper than butter. Time spent in the country is the other measure of students adaptation to the local diet as found by Cortez and Senauer (2006), Su (2003) (hypothesis 2).

International students tend to eat what is available either in stores that are not their traditional foods in the dining halls when they have meal plans. Their choices are limited by lack of money to buy native foods. Moreover, it is expensive to buy imported foods when available in stores. International students adapt and eat what is offered especially when they go out with friends. Eating is connected to cultural identity and the presence of friends from the same origin shapes their habits. Many participants were looking for co-patriots from the same region, same ethnic background to satisfy their craving of home foods.

Time influence

Change in international students eating habits was associated with continent of origin. Nevertheless, as mentioned earlier by interviewees and some other participants, length of stay in the U.S. influences eating habits since moving to the U.S. During interviews, respondents affirmed that the longer they stayed in the United States, the more assimilated they tend to become in terms of their diet. Some participants strived to eat more like Americans because it is convenient. In fact, those who have lived more than five years in the U.S. have found ways to use host country's recipes and foods to feel at home. Overall, dietary acculturation of international students does not depend on length of stay in the USA. Nevertheless, knowing where to buy imported food and affordability are keys to keep home foodways. Hence, the availability of what they can eat is the main factor that influences the change. Someone affirmed: "I don't have choice. But eating with friends helped me to have a healthy diet."

Other factors

Peer pressure as well as friendship ties impact eating habits. Students interviewed remembered that at the beginning of the stay in the current city/town, they were hard to satisfy and did not want to eat something they did not know. There is a fear of the unknown (Gabaccia 1998; Fishler 1988; Flynn 2005; Pollan 2006). Meeting people from the same ethnic background or from the same country has facilitated access to home country foods. That type of acculturation is called by Berry (2008) marginalization from other international students and nationals (host country citizens). That was shown by associating length of residency with friendship ties. Friendships since moving to the U.S. varied based on marital status, age, and area of study. Single students who tended to mingle with other singles had more opportunities to encounter new people and have a large number of friends.

Health consequences due to change of eating habits was noticed by some interviewees. They especially mentioned weight gain. Unhealthier choices were made after migration due to factors such as ignoring recommendations, lack of experience in planning and cooking meals, income, and lack of time (Papadaki et al. 2007). They argued that lack of knowledge at planning meals could result in unhealthy diets. It is especially true when people do not adhere recommendations for a healthy diet or do not have time to cook for themselves. One participant said: "Load of courses does not allow you to cook and have a good diet." Participants knew but did not put in practice their knowledge. Results suggest that a more American diet is not very healthy for international students. Alcohol consumption for instance has been reported by many nutritionists to be dangerous as well as a large amount of coffee (Ruxton 2009).

Eating habits and cultural identity

Food for sub-Saharan participants is connection to home country. One interviewee said: “Talking about eating habits evokes memories from home.” The same feeling is expressed by another student who is grateful of college/university breaks because: “Breaks are always good for me as I can eat things I cannot have here [in Greenville]”. The participant visits parents during the break and therefore had the opportunity to appreciate mother’s cuisine. Another one drove once from Greenville, NC to Raleigh, NC to find home food: “I did it because I missed traditional food.” There was a special mention of teff, a flat brownish bread made of sorghum that is worldwide known as Ethiopian bread. Teff is traditional bread in Ethiopia and Eritrea. That bread was named while the participant was checking head and explained that it has childhood memories.

Limitations and Implications

Limitations to this study restrict the generalization of our results. The majority of participants were students of Asian origins and there were fewer participants from sub-Saharan Africa. Furthermore, our sample was self-selected. The results, however, were consistent with earlier studies reporting changes in diet (Perez-Cueto et al. 2009; Papadaki et al. 2007; Cemalcilar and Falbo 2009). Self-reporting by respondents may be underestimated. For example, the changes made since moving in the U.S. could have not reflected the real changes due to general unreliability of reporting from memory. The number of times participants claimed they have bought imported foods might be inaccurate or inflated. The small size of the sample did not allow us to unfold realities about students of African origins.

CHAPTER VII - CONCLUSION

In summary, sub-Saharan students did not maintain their heritage culture and identity based on Berry's acculturation strategies. Results indicate an assimilated diet. Indeed, their new diet was to the host country's diet. However, friendships were tied with other international students. Thus, they marginalized from host country interactions. This study also suggests that sub-Saharan African students in colleges and universities in the U.S. are facing challenges because of lack of the availability of native foods in stores. Because of the increase of international students' numbers on campuses, certain measures could be implemented to improve their quality of life wherever they are. So far, international students rely on friends, mostly from the host country, to adapt and adopt to a diet in a country that does not always provide traditional foods. Even though students do find home foods in stores, they are reluctant to buy because of higher prices. Therefore, to attract more international students, colleges and universities could ameliorate the selection of foods that are served so that students could improve quality of life. That change would reduce isolation international students face and alleviate stress. Diversity should also be visible not only by the presence of international students on campuses but also in foods.

Further studies should look more carefully at other aspects of international studies such as impact of availability of native foods on their academic success. For such, studies could survey large numbers of students to appreciate differences between sub-Saharan students and other international students on campuses. International students' dynamic put in place to cope with difficulties are to be also considered.

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TABLES

Table 1: Characteristics of the sample (N=142)

Sex	Female 66.2%	Male 33.8%				
Age	18-22 34.5%	23-27 40.8%	28-32 16.9%	33 + 7.7%		
Residency	0-6 9.2%	7-12 12.7%	13-18 7.0%	19-24 13.4%	25 + 57.7%	
Continent	Africa 16.2%	Asia 48.6%	Australia 2.8%	Europe 15.5%	Americas* 14.8%	
Education	Freshmen 5.6%	Sophomore 11.3 %	Junior 12.0%	Senior 19.0 %	Master 25.4 %	PhD 26.8%

Note: Americas*: North America and South America

Table 2: Food consumption before moving to the U.S. (Contingency Tables^a)

	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	15	13	72	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	.095
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 confectionery	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	.016
TV (frozen) dinners	91	9	.0	86	11	3	79	13	8	NS

Note: Mixcont*: North America, South America, Australia, and Europe. ^a Numbers in the table are percentages (%). ^b Sig. (significance) was tested with Chi Square.

Table 3: Food consumption after moving to the U.S. (Contingency Tables^a)

	Africa			Asia			Mixcont*			Sig. ^b
	Eat less	Same as at home	Eat more	Eat less	Same as at home	Eat more	Eat less	Same as at 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 confectionery	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*: North America, South America, Europe, and Australia. ^a Numbers in the table are percentages (%). ^b Sig. (significance) was tested with Chi Square.

Table 4: Correlation Matrix Results

	DietAc	Female	Age	Education	Africa	Asia	Foodav	Buyfood	Lresid	Livplace
1. DietAc										
2. Female	.017									
3. Age	-.100	-.345**								
4. Education	-.101	-.258**	.522**							
5. Africa	.169*	.066	-.043	-.119						
6. Asia	-.093	-.139	-.008	.326**	-.442**					
7. Foodav	-.135	-.105	.062	.164	.090	.199*				
8. Buyfood	-.123	-.154	.058	.098	-.015	.174*	.047			
9. Lresid	.056	-.138	.182*	.106	.246**	-.005	.113	.170*		
10. Livplace	-.001	-.224**	.406**	.409**	-.049	.123	.098	.194*	.311**	
11. Price	-.072	-.081	.034	.086	-.080	.114	.285**	-.060	.026	.043

**Correlation is significant at the 0.01 level (2-tailed)

*Correlation is significant at the 0.05 level (2-tailed)

Table 5: Ordinary Least Squares Regression of Changes in Eating Habits regressed on Continent of Origin, Food Availability, Buying Imported Food, Length of Residency in the U.S., Living Place, Eating Out, and Interaction Terms.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Africa	.329* (.155)	.344** (.155)	.324* (.160)	.329* (.162)	-.478 (.385)	-.493 (.389)
Asia	.049 (.117)	.078 (.118)	.073 (.119)	.071 (.120)	.153 (.249)	.138 (.252)
Food Availability	-.117* (.059)	-.117** (.059)	-.119** (.059)	-.120* (.059)	-.125 (.089)	-.130 (.090)
Buying Imported Food		-.031 (.022)	-.032 (.022)	-.033 (.022)	-.033 (.020)	-.035+ (.020)
Length of Residency in the U.S.			.018 (.038)	.014 (.040)	---	.011 (.036)
Living Place				.043 (.132)	---	.046 (.122)
Eating Out					.073*** (.018)	.073*** (.018)
Africa*Food Availability					.397** (.171)	.400* (.173)
Asia*Food Availability					-.022 (.117)	-.018 (.118)
Intercept	3.675	3.713	3.655	3.640	3.065	3.002
Adjusted R²	.035	.043	.037	.030	.186	.175

Standard errors are in parentheses. * $p < .05$, ** $p < .01$, *** $p < .001$, +.1

APPENDIX A:
IRB APPROVAL



EAST CAROLINA UNIVERSITY

University & Medical Center Institutional Review Board Office
1L-09 Brody Medical Sciences Building • 600 Moye Boulevard • Greenville, NC 27834
Office 252-744-2914 • Fax 252-744-2284 • www.ecu.edu/irb

Date: February 1, 2011

Principal Investigator: Boniface Noyongoyo, Graduate Student
Dept./Ctr./Institute: Department of Sociology
Mailstop or Address: noyongoyob09@ecu.edu

RE: Exempt Certification
UMCIRB# 11-075
Funding Source: Unfunded

Title: "African/International Students in US Colleges and Universities: Eating Habits, Identity and Cultural Assimilation"

Dear Mr. Noyongoyo:

On 01/31/2011, the University & Medical Center Institutional Review Board (UMCIRB) determined that your research meets ECU requirements and federal exemption criterion #2 which includes research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior on subjects 18 years of age or older, unless:

- (a) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and
- (b) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

It is your responsibility to ensure that this research is conducted in the manner reported in your Internal Processing Form and Protocol, as well as being consistent with the ethical principles of the Belmont Report and your profession.

This research study does not require any additional interaction with the UMCIRB unless there are proposed changes to this study. Any change, prior to implementing that change, must be submitted to the UMCIRB for review and approval. The UMCIRB will determine if the change impacts the eligibility of the research for exempt status. If more substantive review is required, you will be notified within five business days.

The UMCIRB Office will hold your exemption application for a period of five years from the date of this letter. If you wish to continue this protocol beyond this period, you will need to submit an Exemption Certification Request at least 30 days before the end of the five year period.

Sincerely,

A handwritten signature in black ink, appearing to be 'KWB', written over the word 'Sincerely,'.

Chairperson, University & Medical Center Institutional Review Board

Pc: Dr. Mamadi Corra, PhD.

APPENDIX B:

E-MAIL TO INTERNATIONAL HOUSES DIRECTORS

Dear ,

I am a graduate student in Sociology at East Carolina University working on a Master's thesis entitled "International Students in U.S. Colleges and Universities: Eating Habits, Cultural Identity, and Dietary Acculturation." The study requires a survey of international students and it is in this regard that I am emailing you. I am trying to get as many international students on U.S. campuses as I can to take the online survey and wonder if you mind forwarding my request to students on your campus. The survey can be taken any time and is estimated to take about 15 - 20 minutes to complete. Students can access the survey at https://ecu.qualtrics.com/SE/?SID=SV_6eYc6XMCRa2YXUo. I would really appreciate your help in this matter and thank you in advance for your help. Please do not hesitate to contact me if you have any further questions. Students can also contact me directly at noyongoyob09@students.ecu.edu if they have any questions about the survey and/or the study.

Sincerely,

Boniface Noyongoyo

APPENDIX C:

E-MAIL TO STUDENTS' ORGANIZATIONS

Dear President,

How are you doing? I hope well.

I would like to ask a favor. I am currently working on my master's project entitled "International Students in U.S. Colleges and Universities: Eating Habits, Cultural Identity, and Dietary Acculturation".

I would like my fellow African brothers and sisters to help me. That is why I am begging your help. I am myself ASO member here at ECU. I sent out the link few weeks and received very few answers from ASO members. Without African Students I won't make it to graduation in May. I really count on you all to finish.

Here is the link: https://ecu.qualtrics.com/SE/?SID=SV_6eYc6XMCRa2YXUo.

Some indications for those taking the survey: by clicking on it a new page will be opened. At the bottom right of every page, arrows permit to go to the next page. When done, there will be a "thank you" page. For the ranking questions inside the survey itself, choices have to be dragged to have them in the order the person wants.

Thank you very much for your appreciated help and participation.

Best regards,

Boniface Noyongoyo

APPENDIX D:
QUESTIONNAIRE

Dear friend,

My name is Boniface Noyongoyo. I am conducting this study as a research project for a Masters in Sociology at East Carolina University. It is entitled "International Students in U.S. Colleges and Universities: Eating Habits, Cultural Identity, and Dietary Acculturation."

I would like to ask you to participate. The survey is made up of 48 questions and will take about 10 to 15 minutes or less. Questions are about your eating habits, your adaptation to life in the US.

All data obtained from participants will be kept confidential and will only be reported in an aggregate format.

Participation in this research is completely voluntary. You can withdraw at anytime or refuse to participate entirely.

If you have questions regarding this study, please contact me at 919-803-9243 or noyongoyob09@students.ecu.edu; or Dr. Corra at 252- 328-4836 or corram@ecu.edu

Thank you very much for your help.

I have read and understood the above consent form and desire of my own free will to participate in this study.

Signature _____ Date: _____

I. Tell us how you went about selecting and buying food in your home country and your eating habits before moving to the US.

Q.1 – How frequently did you read nutritional information?

- a. Never (Skip question 2)
- b. Very rarely
- c. Sometimes
- d. Very often
- e. Always

Q. 2 – How did you learn about nutritional facts?

Please rank the options from 1 being the most used to 7 the least:

- ___ By reading labels
- ___ Studying at school
- ___ Watching TV
- ___ Asking friends
- ___ Reading books, magazines
- ___ Other (please specify): _____
- ___ Don't know

Q.3 – In your opinion, how different is what people eat in the USA from what you ate in your home country?

- a. Very different
- b. Different
- c. Moderately different
- d. Little different
- e. Not different

Q. 4 – How often did you eat the following before moving to the USA?

	Never	Less than once a month	Once a month	2-3 times a month	Once a week	2-3 times a week	daily
(a) Fruits and juices (orange, dates, etc.)							
(b) Fish							
(c) Red meat							
(d) Chicken							
(e) Eggs							

	Never	Less than once a month	Once a month	2-3 times a month	Once a week	2-3 times a week	daily
(f) Milk and dairy products							
(g) Rice							
(h) Wheat (bread)							
(i) Cassava							
(j) Potato							
(k) Yam							
(l) Corn							
(m) Soft drinks/sodas							
(n) Tea/Coffee							
(o) Wine/alcohol							
(p) Legumes (all nuts, peanut butter, soybeans, etc.)							
(q) Dark green leaves vegetables (spinach, beet greens, collards, etc.)							
(r) Vegetables (broccoli, green beans, tomato, lettuce, olives, etc.)							
(s) Sugar and confectionery							
(t) Packaged cakes and cookies							
(u) Canned foods							
(v) TV (frozen) dinners							
(w) Chips							

II. Let's now consider your eating habits since moving to the US. Some factors are known to encourage or discourage healthy eating habits:

Q.5 – During the last month, how often did you eat in each place?

	Never	Less than once a month	Once a month	2-3 times a month	Once a week	2-3 times a week	Daily
Restaurant							
Fast food restaurant							
Dining Hall							
Home/House/Apartment							
Friend's house							
Other (please specify)							

Q.6 – From your experience, what impact does each of the following factors have on your healthy eating habits?

	Very discouraging	Discouraging	Neutral	Encouraging	Very encouraging
(a) Peer pressure					
(b) Media Information (reporting on nutrition /healthy foods)					
(c) Higher price of healthy foods					
(d) Availability of healthy food items in the market					
(e) Healthy foods are boring to eat					
(f) Lack of will power to make healthy food choices.					
(g) Health history in the family					

Q. 7 – With whom do you eat most often?

Please rank the following from 1 the most often to 6 the least often.

- ___ Spouse
- ___ Friend of same country
- ___ Friend from other country
- ___ Relative/Children/Family members
- ___ Roommate
- ___ Boy/Girl friend
- ___ Other: _____

Q. 8 – How often do you cook per week? _____ times per week.

Q. 9 – In your household who cooks most often?

- a. Myself
- b. Spouse
- c. Boy/Girl friend
- d. Relative
- e. Roommate
- f. Other: _____

Q. 10 – Why do you choose to cook?

Please rank the choices with 1 being the most important reason and 7 the least important

- ___ I have enough time
- ___ I save money (compared to eating out)
- ___ I prepare the food the way I like it
- ___ There is health history (diabetes, cardio-vascular disease) in the family.
- ___ I want to maintain healthy lifestyle.
- ___ I eat according to my religious beliefs.
- ___ Other (please specify) _____

Q. 11 – Out of every 10 meals you make, how many were cooked in a manner traditional to your home country? Circle one number between 1 for “none” to 10 meaning “all of them.”

1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10

Q. 12 – How much do you agree with the following statements? Since moving to the USA,

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I increased the quantity of food eaten					
I eat healthier food					
I snack more often between meals					
I eat more often watching TV					
I eat while driving					
I find the taste of food in the U.S. different than in my home country					
I spend a lot of money on food					

Q. 13 – Indicate the changes you made in your diet since moving to US of the following items:

	Eat much less	Eat less	Same as at home	Eat more	Eat much more
(a) Fruits and vegetables					
(b) Soft drinks/sodas					
(c) Fried food					
(d) Sugar and confectionery					
(e) Milk & milk products					
(f) TV (frozen) dinners					
(g) Fish					
(h) Red Meat (pork, beef, veal)					
(i) Packaged cakes and cookies					
(j) Canned foods					
(k) Snacks					
(l) Wine/alcohol					
(m) Non-red meat (turkey, poultry)					
(n) Cassava					
(o) Rice					
(p) Potato					
(q) Corn					
(r) Yam					
(s) Tea/Coffee					

III. Thank you. We are almost done. This section is about your cultural identity and how you adapt in your new area.

Q. 14 – Do you miss food from home?

- a. Never
- b. Rarely
- c. Sometimes
- d. Very often
- e. Always

Q. 15 – Do you find imported food from your country in stores near you?

- a. Never
- b. Rarely
- c. Sometimes
- d. Very often
- e. Always

Q.16 – How often do you buy imported food in a month?

Response: _____ times per month.

Q. 17 – Does not finding imported food affect your eating habits?

- a. Not at all
- b. Very little
- c. A little
- d. A lot
- e. A very great deal

Q. 18 – What do you do to keep up with food from home?

Q. 19 – Indicate with whom you hangout /associate more often.

	Never	Less than once a month	Once a month	2-3 times a month	Once a week	2-3 times a week	Everyday
Other international students							
Students from your country							
American students							

Q. 20 – How important are your friendships/relations with other international students?

- a. Not important at all
- b. Not important
- c. Neither
- d. Important
- e. Very important

Q. 21 –How important are your friendships/relations with Americans?

- a. Not important at all
- b. Not important
- c. Neither
- d. Important
- e. Very important

Q. 22 – How closely do you identify with other people who are of the same racial and ethnic descent as yourself?

- a. Not at all close
- b. Not very close
- c. Somewhat close
- d. Very close

Q. 23 – How close do you feel, in your ideas and feelings about things, to other people of the same racial and ethnic descent?

- a. Not at all close
- b. Not very close
- c. Somewhat close
- d. Very close

IV – Could you, please, tell a little bit about yourself?

Q. 24 – Age: _____

Q. 25 – Sex:

- a. Female
- b. Male

Q. 26 – Marital status:

- a. Married
- b. Divorced
- c. Living together not married
- d. Single
- e. Separated
- f. Widowed
- g. Other (please specify) _____

Q. 27 – Do you have a child or children?

- a. Yes
- b. No

Q.28 – Continent of origin:

- a. Africa
- b. Asia
- c. Australia
- d. Europe
- e. North America or South America

Q.29 – Country of Origin: _____

Q. 30 – What is your population group?

- a. Asian
- b. Black
- c. Mixed
- d. White
- e. Other (please specify): _____

Q. 31 – Did you live elsewhere before moving to the US?

- a. Yes
- b. No. Skip question 32

Q. 32 – Where (places) and how long have you lived in each place? (Duration in months or years). Please, list the last two places you lived in.

Place(s)	Duration

Q. 33 – For how many months have you been living in the USA? _____ months.

Q. 34 – How long have you lived in the city that you now live? _____ months.

Q. 35 – Do you have religious preference?

- a. Yes
- b. No

If yes, what is it? (your religion) _____

Q. 36 – Have you found a community of faith in the US?

- a. Yes
- b. No. Skip question 37

Q.37 – How often do you attend a religious ceremony?

- a. Never
- b. Less than once month
- c. Once a month
- d. 2-3 times a month
- e. Once a week
- f. Two or three times a week
- g. Daily

Q. 38 – Where do you live?

- a. I live alone on campus
- b. I live alone off campus
- c. I share on campus
- d. I share an apartment/house off campus
- e. Other (please specify) _____

Q. 39 – If you share, where are room/housemates from?

- a. The same country.
- b. Different country: Please indicate their country: _____

Q. 40 – How are they related to you?

- a. Spouse
- b. Relative
- c. Friend
- d. Other _____

Q. 41 – Year in school:

- a. Freshman
- b. Sophomore
- c. Junior
- d. Senior
- e. Master
- f. PhD/Doctoral

Q. 42 – Please check your area of study:

- a. Biological sciences
- b. Business
- c. Foreign languages
- d. Health sciences
- e. Humanities
- f. Performing or Fine Arts
- g. Physical sciences
- h. Social sciences
- i. Other (please specify): _____

Q. 43 – Do you currently have a scholarship?

- a. Yes
- b. No

Q. 44 – Do you currently have an assistantship?

- a. Yes
- b. No

Q. 45 – Do you have other income than your assistantship?

- a. Yes
- b. No

Q. 46 – Do you have a meal plan?

- a. Yes
- b. No

Q.47 – Your weight:

c. In kg: _____ or in lbs (pounds): _____

Q.48 – Your height:

d. In m: _____ or in feet: _____

Do you have any additional comments? Please tell me what you have in mind:

Thank you for your participation. I wish you all the best in your studies.

