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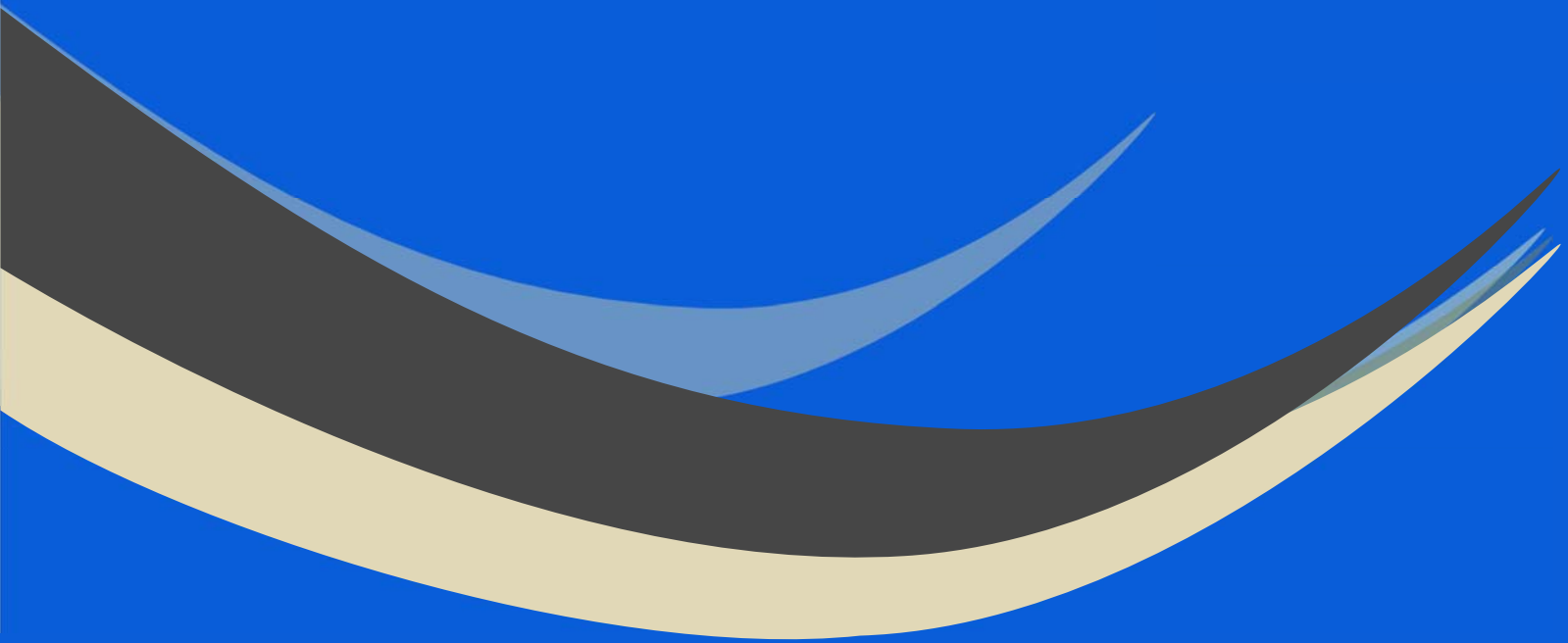
RESEARCH CONTRIBUTIONS:

Child Involvement in Food Preparation during School Lunch to Improve Vegetable Intake: "Mix Your Own Salad Today!"

Factors Influencing Selection and Nutrient Intakes of Non-Training Army Dining Facility Patrons

Alcohol Abuse among Hospitality Management Students

Ethnic Food in the Journey of International College Students in the United States



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ABSTRACTS

Research Manuscripts

Nutrition Professionals Perceptions of Key Performance Indicators

This study examined food allergy accommodation practices and policies in colleges and universities (CU) using a two-phase explanatory sequential mixed methods design. Seventy-six (22.2% response) foodservice professionals responded to a national survey; 11 of whom participated in follow-up interviews. Most (74%) questionnaire participants reported departmental level food allergy policies existed at their institutions while 34% of participants reported presence of institutional level policies. Differences in the likelihood of published policies existed according to institutional demographic characteristics (e.g. institution type, foodservice management type), however findings suggest variability in CU foodservice professionals' approaches to accommodations, regardless of policy presence.

Child Involvement in Food Preparation during School Lunch to Improve Vegetable Intake: "Mix Your Own Salad Today!"

Involvement in salad preparation was tested as a means to increase salad selection and consumption during lunch in an elementary school. Garden and spinach salads were offered separately as pre-mixed salads, as separate components students could self-mix, and as separate components along with promotion. The proportions selecting self-mixed spinach salads (10.7%), self-mixed spinach salads with promotion (13.4%), and self-mixed garden salads with promotion (16.6%) were significantly greater than the proportions selecting pre-mixed salads. Consumption of spinach salads (self-mixed, and self-mixed with promotion) was slightly increased compared to pre-mixed salads. This approach could potentially improve salad selection and intake among children.

Factors Influencing Selection and Nutrient Intakes of Non-Training Army Dining Facility Patrons

To identify what influences soldiers' food selection and consumption behaviors, a variety of methods (i.e., survey, direct observations, digital photography, and plate waste evaluation) were used to measure soldiers' attitudes toward health, nutrition knowledge, reported food behaviors, and actual food selections and nutrient intake. Based on Go for Green® standards, 36% foods offered and 42% foods selected at an Army dining facility were considered least healthy. Perceived hunger was the only factor associated with food selection and nutrient intakes ($p < 0.05$). Nutrition knowledge and attitudes toward health had little influence on actual behaviors. Foodservice professionals may use results to strengthen nutrition initiatives to yield behavior changes.

Alcohol Abuse among Hospitality Management Students

One of the largest employers in the United States, the foodservice industry has a history of employee alcohol abuse; a fact that must be taken into consideration when preparing hospitality students for careers in this industry. The social implications of alcohol abuse, combined with associated legal, health, workplace, and overall well-being issues, warrant further investigation on behalf of all parties involved. The purpose of this study was to investigate the alcohol use of hospitality students working in foodservice, as well as their experience with abuse prevention measures at work and college. Results and implications are discussed.

Ethnic Food in the Journey of International College Students in the United States

The purpose of this study was to investigate the importance of ethnic food to international college students in the U.S. An online survey was developed through reviewing the relevant literature, conducting focus groups, and administering a pilot study. The population of this study consisted of international students enrolled in universities across different regions of the U.S. Four hundred and eleven (411) questionnaires were received, 269 of which were usable. This research has discovered that ethnic food is important to international students and that the inclusion of ethnic food into on-campus dining options is a competitive advantage for universities who provide this service over those who do not. The study has also found that university administrators should pay more attention to providing ethnic food options in on-campus dining services. In addition, the study concluded that ethnic food operators need to focus on certain ethnic food items that international students consider when they dine out.

CHILD INVOLVEMENT IN FOOD PREPARATION DURING SCHOOL LUNCH TO IMPROVE VEGETABLE INTAKE: “MIX YOUR OWN SALAD TODAY!”

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ABSTRACT

Involvement in salad preparation was tested as a means to increase salad selection and consumption during lunch in an elementary school. Garden and spinach salads were offered separately as pre-mixed salads, as separate components students could self-mix, and as separate components along with promotion. The proportions selecting self-mixed spinach salads (10.7%), self-mixed spinach salads with promotion (13.4%), and self-mixed garden salads with promotion (16.6%) were significantly greater than the proportions selecting pre-mixed salads. Consumption of spinach salads (self-mixed, and self-mixed with promotion) was slightly increased compared to pre-mixed salads. This approach could potentially improve salad selection and intake among children.

Keywords: vegetable intake, school meals, elementary school children, involvement in food preparation

INTRODUCTION

Vegetable intake has been associated with chronic disease risk reduction and a decrease in meal energy density (Slavin & Lloyd, 2012; Williams, Roe, & Rolls, 2013). However, nationally representative dietary intake data show that U.S. school-aged children typically consume less than one daily serving of vegetables, or less than half of the daily-recommended number of servings (USDA, ARS, 2014). Given the variety of vegetables offered daily in school cafeteria environments, children eating school meals have the potential to develop long-term healthy eating patterns. Although implementation of the new 2012 school meal regulations requiring children to take vegetables and/or fruit with school lunch has resulted in improved vegetable intake (Cullen et al., 2015; Cohen et al., 2014), there is much room for improvement in selection and consumption.

Recent studies show that child involvement in food preparation is associated with improved vegetable intake (Chu, Storey, & Veugelers, 2014; van der Horst, Ferrage, & Rytz, 2014). Children aged 6-11 years who prepared a lunch meal with parental assistance ate 76% more salad than when parents prepared the meal alone (Van der Horst et al., 2014). Children aged 10-11 years who reported they were involved with meal preparation daily reported eating one more servings of vegetables and fruit per day compared to those who reported that they never prepared meals (Chu et al., 2014). Similarly, children reporting more frequent food preparation also reported higher preference ratings based on nine vegetables and higher self-efficacy for selecting healthy foods than those who reported never preparing meals (Chu et al., 2013).

The IKEA effect described by Norton, Mochon, and Ariely (2012) represents effort justification with individuals overvaluing objects they create themselves. This phenomenon may be partially responsible for the positive outcomes regarding vegetable intake

observed from programs for children that focus on the development of cooking and gardening skills. For example, after fourth-grade children participated in a school-based program involving cooking lessons and tasting sessions, their preferences for vegetables were higher (Cunningham-Sabo & Lohse, 2013). Children (9-11 years) consumed more vegetables after participating in a cooking skills program compared to a control group (Caraher, Seeley, Wu, & Lloyd, 2013). Furthermore, parents reported that their children (2-15 years) consumed 33% more vegetables after participating in a 7-week community gardening program compared to before the program (Castro, Samuels, & Harman, 2013). These programs were conducted in school classrooms or in a community setting; however, the potential benefits from involvement in food preparation in the school cafeteria during school meals have not been examined. A systematic review of school-based interventions to improve vegetable and fruit intake among children (5-12 years) did not identify any studies that included intervention components addressing food preparation by children within the school meal environment (Evans, Christian, Cleghorn, Greenwood, & Cade, 2012).

The purpose of this study was to determine whether involving children in salad preparation in the school cafeteria during lunch would increase the number selecting a salad and salad consumption among elementary school-aged children. This study tested the hypotheses that the number of students who selected a salad and the amount of salad consumed would differ between three conditions: 1) when pre-mixed salads were offered, 2) when salad components that children could mix together were offered, and 3) when salad components children could mix together were offered along with promotion of the salads by research staff.

METHODS

Participants

The intervention was conducted at one elementary school in Richfield, MN during the 2012-2013 school year. A total of 775 students were enrolled in grades K-5 with 424 males (55%), 351 females (46%), and 480 children of a minority population. Of those minorities, 24 students (3%) were American Indian, 91 (12%) were Asian/Pacific Islander, 179 (23%) were Hispanic and 186 (24%) were African American. The number participating in free meals as part of the National School Lunch Program was 402 (52%), with 64 (8%) paying a reduced-price. The demographic characteristics of children in this school were similar to other elementary schools in the district in terms of race/ethnicity and number eligible for free or reduced priced meals. Previous feasibility studies to improve student dietary intake had also been conducted in this school. Because the study was exploratory in nature, the study was limited to only one school. The research was considered exempt from the University of Minnesota IRB committee review based on Exempt Category 2: Surveys/Interviews, Standard Education Tests and Observations of Public Behavior. Approval for this research was obtained from the school district and school administration prior to data collection.

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Table 1. Number of Children Eating Lunch, Number Taking a Salad, and Amount of Salad Consumed by Experimental Condition (n=32)

	Spinach Salad			Garden Salad		
	Day 1 Pre-mixed	Day 2 Self-mixed	Day 3 Self-mixed plus promotion	Day 1 Pre-mixed	Day 2 Self-mixed	Day 3 Self-mixed plus promotion
Number of children eating lunch	583	559	578	614	604	603
Number for whom intake data were missing	5	11	18	6	17	26
Number taking a salad (expressed as percent of all children eating lunch) ¹	28 (4.8) ^a	61 (10.7) ^b	79 (13.4) ^b	54 (8.8) ^a	79 (12.9) ^a	85 (16.6) ^b
Mean amount (grams) of salad consumed per child eating lunch (SD) ²	2 (11) ^a	4 (17) ^b	4 (16) ^b	3 (14)	5 (17)	5 (18)
Mean amount (grams) of salad consumed per child taking a salad (SD) ³	41 (36)	45 (37)	37 (33)	38 (31)	41 (31)	39 (36)

¹Proportion of students taking a salad with different superscript letters are significantly different for each salad type separately when $p < 0.017$ - Bonferroni adjustment applied to the p value ($p < 0.05/3 = 0.017$). Comparisons are only within salad type and not across salad types (not across the entire row).

²Amount of spinach salad consumed per child eating lunch with different superscript letters are significantly different when $p < 0.017$ - Bonferroni adjustment applied to the p value ($p < 0.05/3 = 0.017$).

³Amounts consumed per child taking a salad were not significantly different ($p < 0.05$).

Procedure

This experimental study included two types of side salads, a garden and spinach salad, and three conditions in which each salad type was served to students. Two salad types were included to learn how children reacted to the opportunity to mix a variety of salad types. Each salad type was served three days, one day for each condition, for a total of 6 days of data collection. These conditions included: 1) a control condition where the salad was pre-mixed by cafeteria staff, 2) the first intervention condition where the salad was served as separate components that students could self-mix, and 3) a second intervention condition where the salad was served as separate components students could self-mix along with promotion by research staff. Research staff were trained to consistently demonstrate how the salads could be mixed and to provide the same level of encouragement to each child.

The garden salad was made with one and a half cups of chopped lettuce and romaine (LRC), one ounce of shredded carrots, and one ounce of thawed, frozen peas. The spinach salad was made with one and a half cups of a mixture of LRC and chopped spinach (half LRC, half chopped spinach), one ounce of shredded carrots, and one ounce of dried cherries. In the control condition, salads were served pre-mixed in individual paper boats and arranged on large serving trays. In the first intervention condition, salads were offered as components (greens, carrots, peas/cherries) in separate paper cups for students to mix themselves. The cups containing each component were placed in a larger paper bowl and positioned as a unit in the same place on the cafeteria line as when they were pre-mixed. Students were required to take all three components as a unit. In the second intervention condition, the salads were offered as components to be self-mixed, along with promotion by research staff. To promote the opportunity to self-mix a salad, researchers stood in two locations in the cafeteria, at the entrance to the cafeteria and in the lunch line. At the cafeteria entrance, a cart was set up with signage indicating that each child could mix their own salad today, with two 8.5" by 11" pictures of the garden or spinach salads, one before and one after mixing the ingredients. A researcher stood behind the cart, saying "You can mix your own salad today!" in an encouraging manner as students entered the hallway and briefly demonstrated how the salads could be mixed in the containers provided. Research staff on the lunch line repeated this encouragement by asking each student as they

proceeded through the line, "Would you like to mix your own salad today?"

Each salad type was served once under each condition and in the same order (pre-mixed garden salad then pre-mixed spinach salad, self-mixed garden salad then self-mixed spinach salad, self-mixed with promotion garden salad then self-mixed with promotion spinach salad). Data were collected for three days for each salad type, one day for each condition. The weight of ten salads selected at random from those available on the lunch line was used to determine a mean weight for each salad type on each experimental day based on a standard procedure used previously (Miller et al., 2015). The mean weights for the spinach salads were 154, 161, and 143 grams for the pre-mixed, self-mixed, and self-mixed with promotion conditions, respectively. The mean weight for the garden salads were 165, 158, and 148 grams for the pre-mixed, self-mixed, and self-mixed with promotion conditions, respectively. The menu was matched on control and intervention days so that pizza was served as the main entrée when the garden salad was served and chicken teriyaki was served as the main entrée with the spinach salad. Fried rice, fruit, and a breadstick were also available with the chicken teriyaki meal; raw and cooked vegetables and fruit were served with the pizza meal. Milk was available on all control and intervention days. Students entered the lunchroom by grade.

Control and intervention data collection followed a standardized protocol. After students who took salads sat down at a table in the lunchroom, they were given a small paper card by research staff containing an arbitrary ordinal number. A researcher asked the child for their Personal Identification number (PIN) provided by the school food service system and wrote the corresponding ordinal number next to the child's PIN number on a list of PINs organized by classroom/grade. Each student who took a salad was asked to keep their card on their tray until they finished their lunch. The card was collected along with the salad waste from each student at the dish disposal area as children were leaving the cafeteria. Salad waste was weighed and photographed separately for each child along with the corresponding card containing the ordinal number and grams of waste so the amount of waste could be matched with the PIN number for each student.

Data Analysis

Salad waste (grams) was subtracted from the mean weight of each salad type to calculate amounts consumed. The frequency of selecting a salad and the mean salad consumption weight were calculated by salad type and condition. A pairwise two sample proportion test (two-proportion z-test) was used to compare differences in the number of students who took salads on each day. A Bonferroni correction was applied to adjust the p value based on the group of three tests conducted (control vs. first intervention condition, control vs. second intervention condition, and first vs. second intervention condition) ($p < 0.05/3 = 0.017$). Salad consumption data expressed in grams per child eating lunch were not normally distributed; therefore Wilcoxon signed rank tests were used to compare differences in mean consumption by experimental condition with a Bonferroni correction applied to the p value ($p < 0.05/3 = 0.017$). Expressing the data on the basis of all children eating school lunch provided an indication of the school-wide impact, which has relevance for school foodservice personnel when making decisions about whether to offer self-mixed salad options in the future. Analysis of variance (ANOVA) was used to compare differences in intake when consumption was expressed in grams consumed by child taking the salad as these data met the assumption of normality with a p value < 0.05 used to determine statistical significance. Statistical Analysis Software (SAS, version 9.4, copyright 2002-2012, Cary, NC) was used to conduct the analysis.

RESULTS AND DISCUSSION

A low percentage of students selected a spinach or a garden salad in the control (pre-mixed) condition, 4.8% and 8.8%, respectively (Table 1). The percentages selecting the self-mixed spinach salad (10.7%) and the self-mixed spinach salad with promotion by research staff (13.4%) were greater than the pre-mixed salads (4.8%) ($p < 0.001$ and $p < 0.001$, respectively). The percentage selecting the self-mixed garden salad with promotion by research staff (16.6%) was greater than either the pre-mixed (8.8%) or the self-mixed (12.9%) ($p < 0.002$ and $p < 0.001$, respectively). The findings supported the hypothesis that the number of students who selected a salad differed by condition, with children selecting more spinach salads in the self-mixing conditions compared to the pre-mixed condition and children selecting more garden salads in the self-mixing condition plus promotion compared to the pre-mixed condition. The increased proportion of children selecting salads is a positive observation regarding the feasibility of employing a food involvement approach in school cafeterias. Novelty of the approach and potential enjoyment may have contributed to the increased selection. Children have been shown to enjoy involvement in food preparation during activities to build these skills in schools (Adab et al., 2014; Cunningham-Sabo & Lohse, 2103), therefore children in the current study may have been motivated to select the self-mixed spinach salad by expectations for an enjoyable experience. The promotion by research staff may also have motivated spinach and garden salad selection based on having an opportunity to experience a novel approach involving food preparation during lunch. Children had not been given this opportunity previously either in the lunch line or from a salad bar, which was not available in this school at the time the study was completed. Providing a salad bar in elementary schools increased vegetable consumption by children (Slusser et al., 2007), but information on how and why children select from a variety of foods offered on a salad bar is limited. The opportunity to select individual components from a salad bar to mix together in preferred proportions may be a factor underlying use of salad bars by children based on a sense of enjoyment or autonomy, similar to what might have motivated children to select self-mixed salads in the current study.

The amount of spinach salad consumed per child eating school lunch in the self-mixed ($p < 0.001$) and self-mixed plus promotion ($p < 0.001$) conditions were significantly greater than in the pre-mixed condition (Table 1). The amount of garden salad eaten per child eating school lunch did not differ across experimental conditions. These findings supported the hypothesis that the amount of salad consumed would differ between conditions, with children consuming more spinach salad in the self-mixing conditions compared to the pre-mixed condition when mean intake was expressed as intake per child eating lunch. This hypothesis was not supported based on consumption data for the garden salads. The amount of spinach and garden salad consumed by students who took a salad accounted for about 23%-32% of the total amount of salad in a serving across all conditions (Table 1). No differences were observed in amount of spinach salad ($p = 0.493$) or garden salad ($p = 0.917$) consumed by students who took a salad by experimental condition.

The small increase in intake of the spinach salad observed in the self-mixed conditions was a less positive indication of the feasibility of employing the food involvement approach in school cafeterias. Factors that may have influenced the amount of salad consumed by children included portion size and time allowed to eat lunch. The portion of salad served after the implementation of the new school meal regulations in the fall of 2012 was between 143-165 grams. Children may not have had time to consume this amount of raw vegetable salad, given the limited time children had to eat lunch in school (about 15-20 minutes in the school in this study). National data from the School Health Policies and Programs Study 2006 showed that a high proportion of schools in the US (79%) allowed students at least 20 minutes to eat lunch, regardless of student enrollment, demographic characteristics or grade (elementary, middle or high school) (Balaji, Brener, & McManus, 2010). However, studies that quantified the time students spent at the table in school cafeterias during the lunch period estimated that only about 7 to 10 minutes was time spent eating whereas the rest of the time was spent engaging in non-eating activities, such as socializing or organizing the eating area (Burgel, Bergman, Knutson, & Lindaas, 2002; Zandian et al., 2012). Students in grades 3 to 8 in an urban, low-income school district who selected vegetables ate 12% less of their vegetable when allowed 20 versus 25 minutes to eat lunch (Cohen et al., 2015).

Overall, the selection and consumption of the salads in this school was low, regardless of condition. Strategies to improve selection and consumption of self-mixed salads could include pretesting the concept with an advisory group of students to determine how to better employ the approach in school lunch. For example, although carrots have been rated positively for liking by children in previous studies, green vegetables such as peas and spinach greens have not been rated as highly (Laureati, Bergamaschi, & Pagliarini, 2014; Swenson, 2015). Therefore, children could be given the opportunity to provide input into the selection of vegetables to include in the self-mixed salads that could contribute to less waste. Avoiding vegetable waste is an important priority after implementation of the new school meal regulations (USDA, 2012) requiring children to take vegetables daily (Schwartz et al., 2015).

School lunch has been shown to be an important opportunity for low-income children and adolescents to consume vegetables as part of their daily intake (Longacre et al., 2014), therefore effective strategies are needed to promote consumption. Simple promotional strategies employed in previous studies have included encouragement of fruit or vegetable selection and intake among children in elementary school cafeterias by verbal prompts or signage. These effective strategies involved having a cafeteria staff member verbally

encourage students by asking if they wanted fruit with their lunch (Schwartz, 2007), or placing signs with attractive names for vegetable dishes on the lunch line (Wansink, Just, Payne, & Klinger, 2012). Similarly, in the current study, the promotion of the self-mixed salads through verbal encouragement and demonstration was effective in increasing selection of both salads and intake of the spinach salad above that in the self-mixed condition without promotion. Future studies that examine effectiveness of various approaches to promote salad selection and intake, including cost-effectiveness, are warranted.

Limitations

This study was conducted within one suburban elementary school, thus limiting the ability to generalize findings to other schools. The amount of other raw and cooked vegetables offered on the same day the salads were served was not measured. Therefore, the impact of offering the salad on overall lunch vegetable selection and intake could not be assessed.

CONCLUSIONS AND APPLICATIONS

The number of students selecting the salad was influenced by experimental condition indicating that the self-mixing salad option for food involvement in the school cafeteria may be effective in promoting selection of vegetables. Mean consumption of the spinach salad per child eating school lunch was only slightly increased, whereas consumption of the garden salad did not change as a result of the intervention.

This study expands the literature on child food involvement by focusing on participation in food preparation in the school cafeteria during school lunch, apart from interventions involving the installation of salad bars. The approach was effective in improving intake when applied to all children eating school lunch for one type of salad, which could contribute to an increased intake over time on a cumulative basis. The approach was also effective in increasing selection of salads, which would enable children to consume more vegetables. Although the cost of ingredients was the same across conditions, the labor involved in preparing the self-mixed salads and providing promotion would likely increase the overall cost in the elementary school. However, the cost could be offset to some extent if produce companies would develop cost effective self-mixing salad kits that could be made in large quantities to reduce costs.

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FACTORS INFLUENCING SELECTION AND NUTRIENT INTAKES OF NON- TRAINING ARMY DINING FACILITY PATRONS

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ABSTRACT

To identify what influences soldiers' food selection and consumption behaviors, a variety of methods (i.e., survey, direct observations, digital photography, and plate waste evaluation) were used to measure soldiers' attitudes toward health, nutrition knowledge, reported food behaviors, and actual food selections and nutrient intake. Based on Go for Green® standards, 36% foods offered and 42% foods selected at an Army dining facility were considered least healthy. Perceived hunger was the only factor associated with food selection and nutrient intakes ($p < 0.05$). Nutrition knowledge and attitudes toward health had little influence on actual behaviors. Foodservice professionals may use results to strengthen nutrition initiatives to yield behavior changes.

Keywords: obesity, food selection, nutrient intake, soldiers, healthy eating

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INTRODUCTION

Obesity remains a serious health problem in the United States (U.S.). According to the Centers for Disease Control and Prevention (CDC), 35.7% of all adults and 16.9% of children and adolescents were obese in 2010 (Ogden, Carroll, Kit, & Flegal, 2012). In 2012, state-wide obesity prevalence reached an all-time high with 13 states reporting obesity rates between 30 and 35% (CDC, 2012). Increasing obesity rates have negatively impacted the U.S. military, resulting in increased obesity rates among current service members, a decreased recruitment pool, and an influx of weight-related retention issues (Bray et al., 2009; Hsu, Nevin, Tobler, & Rubertone, 2007; Packnett, Niebuhr, Bedno, & Cowan, 2011; Yamane, 2007).

Routinely making nutritious food choices is a key strategy for obesity prevention and overall health (Seagle, Strain, Makris, & Reeves, 2009). In order to mitigate escalating weight-related problems among military personnel and to improve the quality of soldier's food and beverage choices, several nutrition programs and initiatives have been developed. Many are implemented in Army dining facilities (DFACs) to not only promote good nutrition, but also enable diners to make informed meal selections. DFACs have become the ideal location for such programs because they are utilized by thousands of service members daily (Bray et al., 2009). Point-of-purchase nutrition labeling was initially used in DFACs to provide soldiers with nutrition information for meal selections (Sproul, Canter, & Schmidt, 2003). While point-of-purchase nutrition labeling programs have been effective in other foodservice settings, such as university cafeterias (Chu, Frongillo, Jones, & Kaye, 2009), they were not as effective for improving military diners' food choices (Sproul et al., 2003).

In 2012, the point-of-purchase calorie labeling system in military DFACs was replaced with the *Go for Green*® Program, which places color coded labels for food items at the point-of-purchase and encourages diners to choose lower calorie, nutrient-dense food and beverage options. While it is unknown how effective this system is for improving nutrient quality of soldiers' dining selections, similar programs implemented in civilian worksite cafeterias were found to be overall ineffective for improving meal selections (Freedman & Connors, 2011; Hoefkens, Lachat, Kolsteren, Van Camp, & Verbeke, 2011; Vyth et al., 2011).

Recently, a more aggressive strategy was explored that incorporated not only *Go for Green*® but also modified menu selections in order to improve the healthfulness of offerings through changes to standardized menus (Crombie et al., 2013). Although such menu changes were found to be effective for improving nutrient intakes without compromising satisfaction, this strategy did not improve the quality of food selections, specifically fruit, vegetable and whole grain selections (Crombie et al., 2013).

Several factors such as taste, convenience, and price influence the quality of an individual's food selection behaviors (French, 2003; Glanz, Basil, Maibach, Goldberg, & Snyder, 1998). In addition, attitudes towards healthy eating and nutrition knowledge contribute to one's likelihood of making nutritious food choices (Deshpande, Basil, & Basil, 2009; Kolodinsky, Harvey-Berino, Berlin, Johnson, & Reynolds, 2007; Sun, 2008). While it is plausible that attitudes toward healthy eating and nutrition knowledge may have an influence on food selections of military diners or other similar populations, no research exists to confirm this.

Therefore, the purpose of this study was to evaluate soldiers' nutrition knowledge and attitudes toward health and to determine if these and other factors influence food selections and nutrient intakes of soldiers in a non-training status. This research aimed to strengthen current and future health and nutrition initiatives implemented in DFACs for military personnel by identifying what influence, if any, nutrition knowledge and attitudes toward health have on military diners' meal selections and nutrient intake.

METHODS

Subjects and Recruitment

The target population for this study was soldiers in a non-training status who were dining in Army DFACs. The research was conducted at a large DFAC on an Army base in a Midwestern region of the U.S., serving 400-700 meals during lunch each weekday. According to a G*Power Analysis (Version 3.1.9.2, 2014, Department of Psychology, Universität Düsseldorf) given effect size = 0.15, $\alpha = 0.05$, and power = 0.95 with up to five predictors; a sample size of 89 was needed to estimate the effect of knowledge and various attitudes toward health on food behaviors using linear multiple regression analysis.

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Soldiers on this large military installation are a good representative sample of the target population, as they are recruited from various parts of the U.S. and are not initial trainees. Flyers and posters were placed near the two main entrances of the DFAC one week prior to data collection to notify potential participants of the study. Participant recruitment occurred on the data collection day at the DFAC entrances during the 90-minute lunch period. Researchers provided information about the study, and study participants created a four-digit code on a neon-colored laminated tray card. This card was later used to match the survey and food selection and consumption data. Soldiers utilizing the take-out option, diners other than current active duty service members (e.g., retirees, civilians), and DFAC staff members were ineligible to participate in the study. The study was approved by the Institutional Review Board of Kansas State University and the Madigan Army Medical Center, Fort Lewis, WA.

Instrument and Study Protocol Development

Two main components of data collection methods were developed for this study: assessment of food selection and consumption and a paper-based survey. The first component evaluated the healthfulness of food choices and nutrient intake. The survey measured participants' nutrition knowledge, attitudes toward health, self-reported food selection and consumption behaviors, and demographic characteristics.

Assessment of Food Selection and Consumption: Various food intake estimation methods were employed in combination to determine participants' food selection and consumption. A digital photography method assessed participants' food selections only. While this method was previously used to estimate both food selection and plate waste in foodservice settings (Crombie et al., 2013; Williamson, Allen, Martin, Alfonso, Gerald, & Hunt, 2003, 2004), our preliminary data collection trial revealed that reliability of such an estimation method could not be established. Therefore, the plate waste method was used when determining the amount of plate waste and ultimately the amount of food consumed.

In addition, the reference portion sizes in the previous studies were based on standardized recipe portion sizes (Crombie et al., 2013; Williamson et al., 2003, 2004). However, our preliminary evaluation showed discrepancies between the standardized recipe portion and actual serving sizes. The researchers considered that such variations in serving sizes frequently occur in many foodservice operations, and therefore, the reference portion sizes were determined based on the

amount of food served by DFAC employees on the day of data collection.

After food selections were made, participants' food trays were photographed at one of two identical digital photography stations. Each photograph station included a digital camera (Nikon D3100, Nikon, Tokyo, Japan) mounted on a tripod at a 45-degree angle 20 inches above the food. Tray mats attached on the table and two rulers, which were placed horizontally and vertically next to each tray, were used for consistent photograph reference points.

Direct observation methods (Gittelsohn, Shankar, Pokhrel, & West, 1994) were used to identify the type and the amount of food selected for self-service items. The researchers established reference portions prior to data collection by repeated measures (n = 10) for all items using the standardized serving utensils. Research assistants recorded participants' tray numbers and the type and amount of each food item selected at each self-service area (i.e., salad bars) on an observation form. Participants' food selections at self-service stations were added to food selection data collected using the digital photography method to assess overall food selection.

Plate waste methods (Adams, Pelletier, Zive, & Sallis, 2005; Templeton, Marlette, & Panemangalore, 2005) were used to estimate the quantity of food left on each plate. After completing their meals, participants placed their trays with the tray card on the tray return belt. Once trays with the laminated cards reached the dishroom, research assistants collected them and photographed trays with leftover food items. Then, the amount of edible food left on the plate was weighed and recorded to the nearest gram using a calibrated digital scale.

Evaluation of Food Selection Quality and Nutrient Intake: The nutrition quality of food selected was assessed by percentages of healthy and unhealthy food choices based on the Army's *Go for Green*® Program standards (U.S. Army Food Service, 2012). The DFAC where the data collection occurred had implemented this labeling system to encourage patrons to make nutritious food choices. All food items offered were identified as green, amber, or red based on total calories and nutrient content according to *Go for Green*® standards (U.S. Army Food Service, 2012). Table 1 provides a summary of the *Go for Green*® program labeling criteria. The quality of food selection was assessed by the percentage of green items selected.

Table 1: Go for Green® Program Criteria

Category	Green-Labeled Items	Amber-Labeled Items	Red-Labeled Items
Entrees	<p>Single Items: <300 calories <10 g fat</p> <p>Full Dish: <500 calories <18 g fat</p>	<p>Single Items: 300-500 calories 10-15 g fat</p> <p>Full Dish: 500-700 calories 18-25 g fat</p>	<p>Single Items: >500 calories >15 g fat</p> <p>Full Dish: >700 calories >25 g fat</p>
Starchy Sides	<200 calories Higher fiber choices	200-300 calories	>200 calories
Vegetables	<100 calories	<100 calories	>200 calories
Dessert	<150 calories <6 g fat	150-300 calories 6-12 g fat	>300 calories >12 g fat
Beverage	Water, calorie-free/low calorie beverages, 100% fruit juice	Sports drinks	Fruit Juice (less than 100% juice), fruit drinks, energy drinks, Kool-aid®, regular soda
Dairy	Skim or 0-1% fat	Reduced fat or 2% fat	Whole or 4% fat

Note. Adapted from United States Army Quartermaster School Joint Culinary Center of Excellence (JCCoE). (2012). *Go for Green Program Criteria*. Retrieved from http://www.quartermaster.army.mil/jccoe/Operations_Directorate/QUAD/nutrition/Program_Criteria_g4g_Approved_Version_2013.pdf

Total energy (kilocalories), total fat, saturated fat, dietary cholesterol, total carbohydrates, dietary fiber, protein, vitamins A and C, iron, and sodium were calculated based on the food consumption data (i.e., reference portion size minus plate waste) using U.S. Department of Agriculture (USDA) Nutrient Database for Standard Reference, release 26 (USDA, Agriculture Research Service, 2013). The total nutrient consumption for each soldier was calculated by adding nutrients from every item using Microsoft Excel®.

Food selection and consumption assessment methods were pilot-tested with 50 patrons during one lunch period at another DFAC one menu cycle (i.e., 3 weeks) prior to the day of data collection. Minor adjustments were made to enhance data collection methods prior to collecting data.

Nutrition Knowledge, Attitudes Toward Health, and Self-reported Food Behaviors: Researchers developed a 50-item questionnaire to assess nutrition knowledge ($n = 10$), perceived importance of eating a healthy diet ($n = 9$), perceived healthfulness of their current diet ($n = 1$), benefits ($n = 4$) and barriers ($n = 6$) to eating a healthy diet, cues to action ($n = 5$), self-reported food selection and consumption behaviors ($n = 5$), and perceived hunger and satiety levels before and after the meal ($n = 2$) based on literature review and expert input. Demographic information ($n = 9$) was also included to characterize the participants (i.e., age, gender, years of service). In addition, height and weight information was asked to assess the body mass index (BMI) of soldiers to identify any differences in current weight status based on knowledge, attitudes and reported behaviors.

Nutrition knowledge questions were developed using a multiple-choice format based on inputs from an expert panel of 20 current Army Registered Dietitians/Registered Dietitian Nutritionists (RD/RDNs). The panel members provided suggestions for important nutrition knowledge questions for soldiers based on their nutrition education and counseling experiences. Questions addressing various perceptions and attitudes toward health were measured using a five-point Likert scale. Typical food behavior questions used multiple answers and multiple-choice formats, and perceived hunger and satiety levels were rated using an 11-point Likert scale (1 being greatest imaginable hunger, 6 being neither hungry nor full, 11 being greatest imaginable fullness).

The final survey instrument was reviewed by a panel of military foodservice experts and foodservice researchers ($n = 9$) then pilot-tested during lunch at another DFAC with 30 soldiers one month prior to data collection. Each variable had a Cronbach's alpha of at least 0.85, and no further adjustments were made to the questionnaire.

Data Collection

Following the aforementioned protocol, participants were recruited and completed both the survey and analysis of food selection and consumption. After receiving information about the study and placing their laminated card containing their self-created four-digit code on their food tray, participants selected food and beverages then proceeded to one of two digital photography stations near seating areas. Research assistants handed out a consent form and the questionnaire for participants to complete while eating their meal as they approached one of the photography stations before consuming their meals. After their meal, research assistants collected completed questionnaires, the signed consent form, and trays for weighing plate waste and another digital photography for the record. Participants received a small token of appreciation upon completion (e.g., keychain flashlight).

Data Recoding and Statistical Analysis

Food Selection and Nutrient Quality: Food selection quality, the percentage of green-labeled food items selected according to the Army's *Go for Green*® Program, was calculated using the following equation:

$$\text{Food selection quality (\%)} = \frac{\text{total number of green labeled items selected}}{\text{total number of food items selected}} \times 100$$

Nutrient intake, calculated using the USDA nutrient database, was compared with the daily military dietary reference intakes (MDRI) and established macronutrient meal guidelines included in Army Regulation (AR) 40-25, *Nutrition Standards and Education* (Headquarters Department of the Army, Navy, and Air Force, 2001). Nutrient intake was evaluated based on whether a participant met or exceeded one-third of the MDRI or established meal guidelines.

Nutrition Knowledge, Attitudes toward Health, and Reported Behaviors: Descriptive statistics were calculated to summarize the data for all survey questions including demographic data. Microsoft Excel® was used to calculate BMI of soldiers for further analysis. Nutrition knowledge questions were coded as one for correct and zero for incorrect answers. The total score was calculated using compute function of SPSS (version 21.0, IBM Corporation) and ranged from zero to 10 points.

Attitudes toward health were measured using five-point Likert-type scales. In addition to descriptive statistics, responses of four or five on a five-point scale were placed into "endorsed" category while all other responses (neutral, disagree or strongly disagree) were considered not endorsed. Endorsed items were recoded with a one and not endorsed items a zero, and the total number of endorsed items was calculated and used for further statistical analysis.

Participants reported typical food choices, weekly breakfast frequency, fried food consumption, fruit and vegetable intake and sugar-sweetened beverage consumption patterns. For typical food choices, participants were asked which food items best represent what they would typically choose at a lunch or dinner meal. They were directed to select one food item from each meal category (i.e., entrée, starch, vegetable, dessert) listed. If none of the selections were applicable, a write-in option was also included. One green, amber and red-labeled food item was included in each meal category. All answers were recoded based on the *Go for Green*® labeling criteria, and the percentage of green-labeled items selected was determined using the aforementioned food selection equation.

Answers to breakfast frequency and fruit/vegetable intake were coded zero for least desirable through five for most desirable, with "I don't know" option being considered as missing. Fried food consumption was reverse-coded for most frequent consumption being zero and least frequent consumption being five. Participants who were regularly consuming sugar-sweetened beverages were asked to list the total number of 12, 16 and 20-ounce containers of sugar-sweetened beverages consumed daily and/or weekly. The number of total ounces of sugar-sweetened beverages consumed per week was calculated based on daily/weekly consumption data.

SPSS was used to conduct all analyses with $p < 0.05$ for statistical significance. Descriptive statistics were used to summarize the data, and Pearson bivariate correlation coefficients and logistic and multiple regression analyses were used to examine relationships between and among variables.

RESULTS

Participants

A total of 172 soldiers agreed to participate in the study. Of these, 154 surveys were returned, and 135 sets of pre- and post-consumption photographs were collected. Using the self-created four-digit code, we matched 105 surveys with digital photographs. Based on G*Power analysis, the numbers of returned surveys ($n = 154$), paired photographs ($n = 135$) and matched photographs collected ($n = 105$) for this study were adequate to detect relationships among variables of interest. Figure 1 describes the overall participant recruitment and usable data availability.

On average, participants were 24.9 years old (Standard Deviation [SD] = 6.1) with a BMI of 25.9 (SD = 3.1). The majority of participants were between 19 and 25 years old (64%) and had a BMI greater than 25.0 (62%). Most participants were male (93%), meal card holders (soldiers provided meals on behalf of the government) (80%), at the rank of E1-E4 (enlisted ranks 1 through 4, 79%), had completed ≤ 3

years of military service (74%), and possessed a high school diploma (68%). A small number of participants (4%) were enrolled in the active duty weight control program.

Actual and Self-reported Food Selection and Consumption Behaviors

Table 2 presents DFAC offerings available at lunch on the data collection day and their classification based on the *Go for Green*[®] labeling standards. The mean percentages of green-, amber- and red-labeled items selected by soldiers at DFAC were somewhat similar with percentages of color-labeled food items offered. The percentage of green items offered in the DFAC was 36%, while 21% were amber- and 43% were red-labeled (Table 2). The observed food choices of green-, amber-, and red-labeled items were 38%, 19%, and 42%, respectively. Participants reported better food selection behaviors on the survey than their observed behaviors. The mean percentages of self-reported green-, amber-, and red-labeled choices were 57%, 21%, and 22%, respectively.

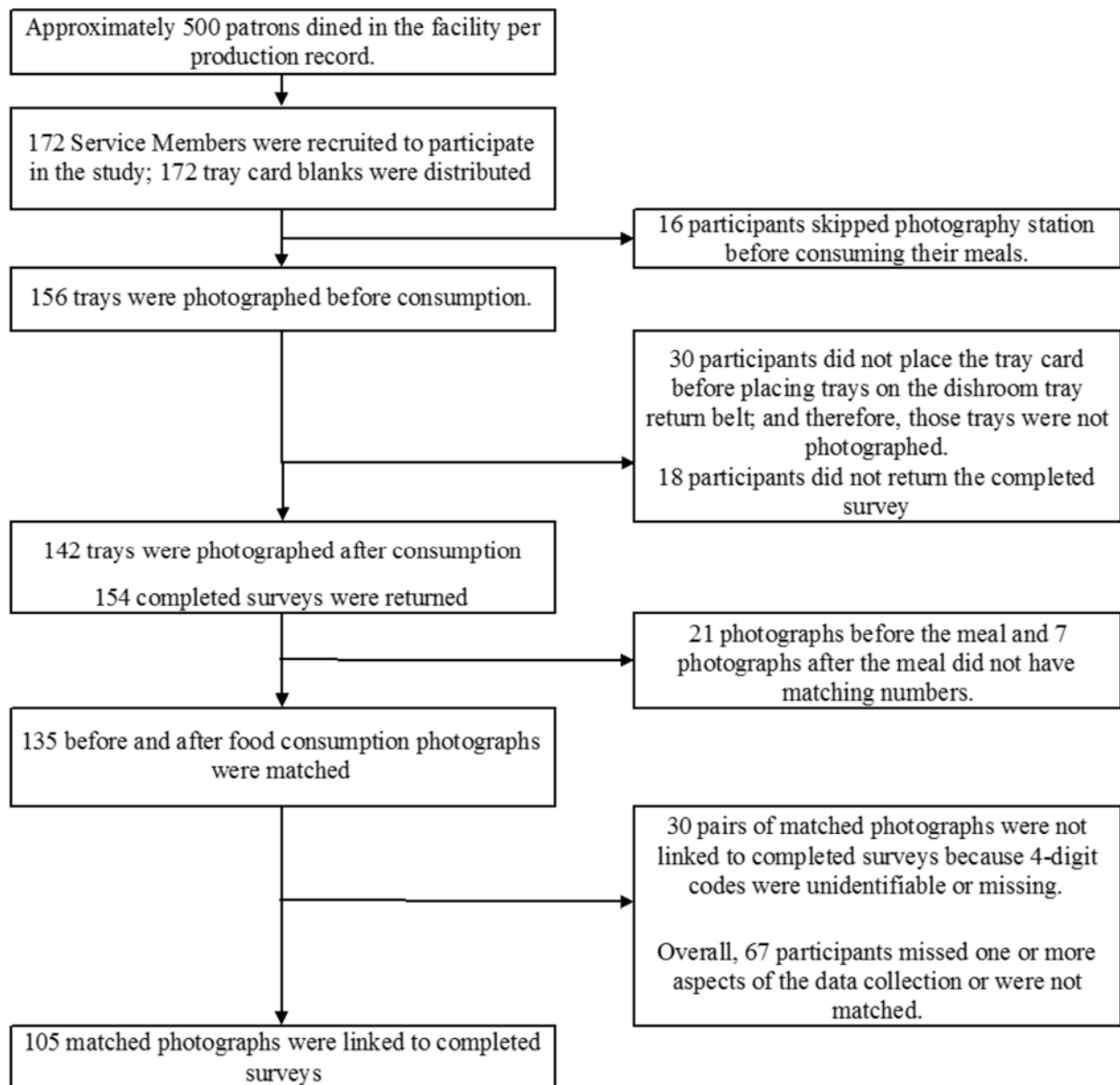


Figure 1. Summary of Recruitment Process

Table 2. Summary of Non-Trainee DFAC Meal Offerings Based on Go for Green Labeling Criteria

Meal Category	N (% ^a)	Items by Color		
		Green	Amber	Red
Entrée	2 (3%)	1	1	0
Side Dishes	8 (11%)	4	1	3
Salad Bar	24 (31%)	7	4	13
Sandwich Bar	13 (17%)	2	2	9
Short Order	8 (11%)	5	3	0
Desserts	6 (8%)	4	1	1
Condiments	14 (19%)	4	4	6
Total Number of Items (%^b)		27 (36%)	16 (21%)	32 (43%)

Note. DFAC = Dining Facility; ^{a, b} calculations based on total number of meal items offered (n = 75).

Descriptive statistics of nutrient intake are provided in Table 3. On average, participants consumed 886 kilocalories comprised of 41% carbohydrates (net), 18% protein, and 40% fat. Over half of the participants consumed 33% of the MDRI for protein, iron, vitamin C and cholesterol, while only 18% met recommended intakes for vitamin A.

A large number of soldiers (79%) reported consuming sugar-sweetened beverages (e.g., regular soda, sweetened tea). The mean score of weekly total volume of self-reported sugar-sweetened beverage consumption was 236 fluid ounces (29.5 cups), with over 64% of participants consuming at least 128 fluid ounces (1 gallon) or more weekly.

Nutrition Knowledge, Attitudes toward Health, and Perceived Hunger Level

Nutrition knowledge was measured using 10 multiple-choice questions and defined as the sum of correct responses. The mean score of nutrition knowledge was 6 of 10 or 60%, and 28% of participants answered at least 80% of the questions correctly while 21% answered 30% or less of the questions correctly. Most participants recognized meals that are lower in total fat (88%) and saturated fat (77%). However, less than half of the participants were not aware of the best food choices prior to physical activities (e.g., complex carbohydrates) and less than one-third identified the recommended number of daily servings of fruits and vegetables. Table 4 provides a summary of the percentage of correct and incorrect responses to nutrition knowledge questions.

Table 5 lists frequencies and percentages of participants' responses to the five variables used to determine attitudes toward health. Most soldiers (71%) perceived their diets were healthy, and eating a variety of foods (79%) and a lot of fruits and vegetables (75%) were important aspects of a healthy diet. Lack of convenience (49%) was the main barrier to eating a healthy diet and food labels (55%) was the most frequently identified factor influencing healthy eating.

Perceived hunger and satiety levels before and after the meal revealed participants were very hungry (Mean = 3.0 on the 11-point scale) prior to meal consumption and moderately to very full (Mean = 8.6 on the 11-point scale) after the meal. Over one-fifth of participants (22%) reported extreme or greatest imaginable hunger levels (1 or 2) before the meal and 25% reported being extremely full or experiencing greatest imaginable fullness (10 or 11) afterwards.

Factors Associated with Food Selection and Consumption Behaviors

Multiple regression analyses showed significant relationships between some constructs related to attitudes toward health and reported food selection and consumption behaviors (Table 6). Perceived adequacy of current diet was positively associated with the number of green-labeled items typically chosen at a meal (i.e., reported food selection) ($\beta = 0.25, p < 0.01$) and breakfast frequency ($\beta = 0.21, p < 0.05$) and negatively associated with fried food intake ($\beta = -0.18, p < 0.05$). Perceived importance of eating healthy diet was positively associated with fruit and vegetable intake ($\beta = 0.21, p < 0.05$). When constructs related to attitudes toward health were

Table 3. Summary of Non-Training Military Diners' Lunch Meal Nutrient Intakes (n = 135)

Variable	Female or Male MDRI Standards ^a	M ± SD	Range	Participants who consumed ≥33% MDRI	
				n	% ^b
Energy (kcal)	2300 or 3250	886 ± 326	(248 – 1895)	33	31
Carbohydrates (g)	50-55% of total energy	91 ± 39	(19 – 218)	NA ^c	NA
Dietary Fiber (g)	NA	9 ± 5	(1 – 26)	NA ^c	NA
Protein (g)	10-15% of total energy	38 ± 15	(10 – 72)	77	53
Sodium (mg)	3600 or 5000 mg per day	1784 ± 872	(331 – 5479)	32	30
Iron (gm)	10 or 15 mg per day	6 ± 3	(2 – 13)	82	57
Vitamin C (mg)	75 or 90 mg per day	45 ± 44	(0 – 180)	48	33
Vitamin A (IU)	800 or 1000 mg RE per day	2430 ± 3156	(86 – 15731)	19	13
Cholesterol (mg)	≤ 300 mg per day	133 ± 68	(0 – 339)	66	62
Total Fat (%)	< 30% of total energy	40 ± 18	(7 – 52)	NA ^c	NA
Saturated Fat (%)	< 10% of total energy	11 ± 6	(0 – 16)	NA ^c	NA

Note. MDRI = Military Dietary Reference Intakes, NA = Not applicable

^a MDRI nutrient intake standards extracted from Army Regulation 40-25, "Nutrition Standards and Education" by Headquarters, Departments of the Army, Navy, and Air Force, 2001.

Values for energy, protein, and associated nutrients expressed as average daily nutrient intakes and based on moderate activity levels and reference body weight of 79 kg (174 lb) for military men and 62 kg (136 lb) for military women.

^b Percentages calculated based on sample size n=135.

^c Not applicable because MDRI does not specify the amounts of carbohydrates, fiber, total fat, and saturated fat.

Table 4. Percentage of Correct Responses to Nutrition Knowledge Questions (n = 135)

Nutrition Knowledge Question	% Correct ^a
1. Which meal is LOWER in total fat?	88
2. Which meal is LOWER in saturated fat?	77
3. Which of the following food items is LOWEST in saturated fat?	72
4. Which of the following foods would be considered the BEST low-calorie, nutrient-rich food choice?	70
5. Which of the following food choices is the BEST source of omega-3 fatty acids?	70
6. Which of the following food or beverage items is considered the BEST source of complex carbohydrates?	61
7. Which of the following choices would be considered SAFE weight loss?	51
8. Which nutrient would be the BEST to consume prior to engaging in physical activity lasting approximately an hour?	46
9. According to the USDA's "Choose My Plate" guidelines, approximately how much of your plate should be filled with fruits and/or vegetables?	32
10. Which of the following alcohol servings contains the MOST calories?	24

^a Percentages calculated based on 135 total responses

evaluated for predicting reported food behaviors, results showed that attitudes toward health was significant for the number of green labeled choices ($p < 0.01$), breakfast frequency ($p < 0.001$) and fried food intake ($p < 0.05$) but not for fruit and vegetable intake ($p > 0.05$). In addition, attitudes toward health were not associated with the reported amount of sugar-sweetened beverage consumed.

Contrary to the fact that attitudes toward health were related to reported food selection and consumption behaviors, results showed no correlations between attitudes toward health and actual food selection and consumption behaviors. Logistic regression results showed that attitudes toward health predicted whether participants met the MDRI for protein ($p < 0.01$) but not for amount of kilocalories, cholesterol, sodium, iron, and vitamins A and C ($p > 0.05$). Additionally, attitudes toward health failed to predict whether participants met established recommendations for percent carbohydrates, total fat, and saturated fat ($p > 0.05$) or associated with percentage of green-labeled food selection.

Perceived hunger levels was the only factor that showed significant correlation with the actual food selection and consumption behaviors. Intuitively, greater hunger levels were associated with higher intakes of kilocalories, protein, cholesterol, sodium, total fat, and saturated fat ($p < 0.01$). Likewise, soldiers who consumed higher kilocalories reported being very satiated following their meal. In summary, the hungrier soldiers were before coming to eat lunch, the fuller they were after the meal because they ate a greater amount of food.

DISCUSSION

A scant amount of research exists evaluating eating behaviors of military diners and to date, such research focused on evaluating the influence nutrition interventions have on soldiers nutrient intakes and overall satisfaction (Crombie et al., 2013; Sproul et al., 2003). No research has attempted to connect soldiers' beliefs, attitudes and nutrition knowledge with the quality of their food choices and nutrient intake. To our knowledge, this study is the first to address this gap and to evaluate these relationships with both reported and actual behaviors for military personnel.

We found using a combination of previously established food intake estimation methods (Templeton et al., 2005; Williamson et al., 2003) was effective for estimating participants' meal selections and food consumption. Our evaluation of soldiers' macronutrient intakes was consistent with previous findings, which were estimated using digital photographs (Crombie et al., 2013). Using a combination of methods, even though it required a larger number of research assistants than using the digital photography method only, researchers were able to effectively estimate food consumptions while minimizing service

disruptions due to research activities being conducted in the dining room. As previous studies identified, soldiers' actual selections and nutrient intakes were more closely related to DFAC meal offerings and less with reported food selection behaviors (Cullen, Watson, & Zakeri, 2008; Vecchiarelli, Takayanagi, & Neumann, 2006). While green-labeled items were available, a majority of the main course offerings

Table 5. Frequencies and Percentages of Non-Training Soldiers' Endorsed Items for Attitudes Toward Health (n = 144)

Construct	Endorsement ^a	
	n	% ^b
Perception of current diet	97	71
Perceived benefits to eating a healthy diet		
<i>Maintain health body weight</i>	131	95
<i>Improve overall health</i>	131	94
<i>Improve physical performance</i>	127	92
<i>Decrease body fat percentage</i>	120	87
Perceived barriers to eating a healthy diet		
<i>Healthy food is less convenient</i>	67	49
<i>Others around me make unhealthy food choices</i>	55	40
<i>Healthy food is unavailable in the dining facility</i>	51	37
<i>Healthy food is unaffordable</i>	42	31
<i>I lack enough nutrition knowledge to make healthy food choices</i>	27	20
<i>I don't desire to eat healthy food</i>	21	15
Perceived importance of eating a healthy diet		
<i>Contains a variety of foods</i>	107	79
<i>High in fruits and vegetables</i>	103	75
<i>High in fiber</i>	97	71
<i>Low in cholesterol</i>	93	69
<i>Low in saturated fat</i>	90	67
<i>Low in sugar</i>	89	65
<i>Low in total fat</i>	87	64
<i>Low or moderate in salt or sodium</i>	80	59
<i>Lower in calories</i>	79	58
Cues to action		
<i>Identified or labeled as healthy</i>	77	55
<i>Recommended by a family member</i>	72	52
<i>Recommended by a healthcare professional</i>	70	51
<i>Recommended by a friend or colleague</i>	66	48
<i>Recommended by a work supervisor</i>	57	41

^a Endorsed responses include the participants who strongly agree or agree with each question

^b Percentages calculated based on 144 total responses.

Table 6. Multiple Regression Analysis Predicting Non-Training Diners' Reported Food Behaviors from Attitudes Toward Health

Variables	Reported Food Behaviors ^a							
	Green Labeled Choices		Breakfast Frequency		Fried Food Intake		Fruit/Vegetable Intake	
	β	95% CI	β	95% CI	β	95% CI	β	95% CI
Perceived Adequacy of Current Diet	0.25**	[0.15, 0.94]	0.21*	[0.09, 1.01]	-0.18*	[-0.75,-0.01]	0.07	[-0.21, 0.46]
Perceived Benefits	0.18*	[0.01, 0.35]	0.12	[-0.06, 0.34]	-0.08	[-0.23, 0.09]	-0.01	[-0.15, 0.14]
Perceived Barriers	0.04	[-0.09, 0.14]	-0.02	[-0.15, 0.12]	-0.10	[-0.05, 0.17]	-0.14	[-0.17, 0.02]
Importance of Healthy Diet	0.02	[-0.05, 0.07]	0.16	[-0.01, 0.13]	0.07	[-0.04, 0.08]	0.21*	[0.01, 0.11]
Cues to Action	0.00	[-0.09, 0.09]	0.12	[-0.03, 0.18]	-0.21*	[-0.19,-0.01]	-0.15	[-0.14, 0.02]
R ²	.11		.16		.11		.06	
F	3.34**		4.89***		3.16*		1.52	

Note. CI = confidence interval.

N = 126.

^abased on survey questions assessing reported food selection and consumption behaviors.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

were red- and amber-labeled choices, making it difficult for military diners to choose healthy food items and conducive for making high calorie, low nutrient food choices.

Consistent with previous studies evaluating the relationship among health-related beliefs and reported diet quality (Deshpande et al., 2009; Sapp & Jensen, 1998; Sapp & Weng, 2007), we found soldiers' attitudes toward health were associated with most self-reported dietary behaviors. Similar associations were also found between nutrition knowledge and self-reported food behaviors, which was also supported by previous studies (Drichoutis, Lazaridis, & Nayga, 2005; Kolodinsky et al., 2007).

One exception to this association between attitudes toward health and self-reported behaviors was sugar-sweetened beverage consumption. Regardless of their attitudes toward health, a majority of soldiers (75%) regularly consumed sugar-sweetened beverages. Although we did not measure how much they drank during the meal due to complexity and inability to keep track of refills, we observed that a majority of soldiers chose sugar-sweetened beverages. Their reported behaviors related to sugar-sweetened beverage consumption were observable in dining areas and showed similarity to previous studies evaluating sugar-sweetened beverage consumption trends among U.S. adults and adolescents (Bleich, Wang, Wang, & Gortmaker, 2009; Claire Wang, Bleich, & Gortmaker, 2008). The percentage of soldiers who reported consuming sugar-sweetened beverages on a regular basis and the estimated amount consumed were considerable despite recommendations to consume less.

While soldiers' nutrition knowledge and attitudes toward health influenced their reported behaviors, this was not the case with their actual eating behaviors. We did find, however, a strong association between perceived hunger level and nutrient intake. Soldiers' reporting greater hunger levels consumed more kilocalories, fat, cholesterol and sodium and also reported greater fullness after the meal. As demonstrated in previous studies (Almiron-Roig, Grathwohl, Green, & Erkner, 2009; Farajian, Katsagani, & Zampelas, 2010; Williams, Noakes, Keogh, Foster, & Clifton, 2006), our results suggest that for this population, attenuating hunger levels prior to meals may improve the quality and self-regulate quantity of foods consumed. Additionally, this finding, along with previous studies, support the possibility that other factors, such as hunger, taste, availability, and convenience, were more influential on food selection

and consumption behaviors (Glanz et al., 1998; Levi, Chan, & Pence, 2006).

There are several limitations to this study. First, the target population of this study was soldiers in non-training status in the U.S. Therefore, results cannot be generalized beyond this specific population such as initial military trainees. It is also plausible that those who participated in the study may have been more conscientious about health and wellness, and thus, non-response bias may exist in our data. Because participation was completely voluntary; we could not avoid this bias, and those who may have felt uncomfortable sharing their food behaviors may have opted out from the data collection. In addition, because health and fitness is a condition of their employment, social desirability bias may have impacted our data.

Second, since limited resources were available to fund research assistants, data collection for this study occurred over a lunch meal period at one DFAC. Patrons' food selections and nutrient intake in this particular DFAC may have been different from patrons at other DFACs and/or at breakfast and dinner times. In addition, participants' food selections were assessed on only one occasion. Analyzing soldiers' food selections and intake over several meals, across different meals and/or at different DFACs may provide better generalizability. The current study used 19 volunteers and research assistants to collect data from soldiers due to the large number of patrons being served within a short time period with multiple self-service stations. Future studies may assess participants' food choices and consumptions over multiple occasions, at different meals and at more than one DFAC for a comprehensive analysis of actual food selection and intake of this population.

Lastly, the research team did not take beverage consumption into consideration for food selection quality or nutrient intake. This was due to the layout of the DFAC and difficulty in keeping track of refills. Therefore, the nutrient analyses we presented do not include nutrients and energy intakes from beverages.

CONCLUSIONS

This study evaluated self-reported and actual food selection and consumption behaviors, nutrient intakes, and factors affecting these behaviors of non-training Army DFAC patrons (i.e., soldiers' nutrition knowledge and attitudes toward health). The results of the study indicated that while knowledge and attitudes were associated with self-reported food selection and consumption behaviors, only

physiological cues, such as hunger, and food availability impacted actual food selection and intake. Furthermore, we found overall soldiers were knowledgeable about nutrition and possessed positive attitudes toward health, but their nutrient intakes failed to meet the established guidelines. The results of this study provide evidence that for this and other similar populations (i.e., young, male, and generally healthy and active), nutrition education only may not result in improved food choices and nutrient intakes when consuming meals in cafeteria settings.

Foodservice professionals or RD/RDN can use these results when developing strategies to influence and improve the healthfulness of young populations' dietary behaviors in away-from-home settings. Extending beyond simply educating and informing consumers about healthy food choices, establishing initiatives that improve the nutrition quality of meal offerings (i.e., healthy menu offerings in DFACs) and the number of nutritious choices may influence food behaviors of this population. In addition, nutrition initiatives implementing in foodservice settings could include education that encourages healthful snacking between meals. These initiatives could also make nutritious snacks available to diners outside of meal periods to control hunger levels before meals and influence this and similar population to make healthy food choices.

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FOODSERVICE EMPLOYMENT AND ALCOHOL ABUSE AMONG HOSPITALITY MANAGEMENT STUDENTS

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ABSTRACT

One of the largest employers in the United States, the foodservice industry has a history of employee alcohol abuse; a fact that must be taken into consideration when preparing hospitality students for careers in this industry. The social implications of alcohol abuse, combined with associated legal, health, workplace, and overall well-being issues, warrant further investigation on behalf of all parties involved. The purpose of this study was to investigate the alcohol use of hospitality students working in foodservice, as well as their experience with abuse prevention measures at work and college. Results and implications are discussed.

Keywords: alcohol abuse, hospitality student, foodservice

INTRODUCTION

Employing a projected 13.5 million workers in 2014, the foodservice industry in the United States is one of the largest private-sector employers in the nation (National Restaurant Association, 2014). Given the size and scope of this industry, the prevalence of alcohol abuse among its employees makes this a concern at the individual, organizational, and societal levels (Frone, 2003; Larsen, 1994; Larsen, Eyerman, Foster, & Gfroerer, 2007; Pizam, 2010; Zhu, 2008). In fact, hospitality employees were found in one recent study as the most at-risk sector after construction workers for alcohol related problems (Murray, 2009), and the foodservice industry was found to be the third most at risk for heavy alcohol use after mining and construction workers among working adults aged 18-64 who were employed full-time (Bush & Lipari, 2015). Heavy drinking is common among the foodservice industry's employees. Research has shown that one in ten foodservice employees engages in heavy alcohol consumption, defined by the authoring agency. The National Institute on Alcohol Abuse and Alcoholism's (2013) category of 'at-risk' or 'heavy drinkers,' and at risk of developing alcoholism and other mental and physical problems is defined as drinking four drinks on any day or 14 drinks per week for men, and three drinks on any day or seven drinks per week for women (NIAAA, 2013).

In addition to social implications of alcohol abuse by employees or students, there are also serious legal implications which may apply to the employer or college. Further, the Substance Abuse and Mental Health Services Administration (SAMHSA) advises that "stopping substance abuse before it begins can increase a person's chances of living a longer, healthier, and more productive life" (SAMHSA, 2012, para 3). Consequently, the various health issues and overall well-being associated with excessive alcohol consumption warrants further investigation on behalf of foodservice industry employees, hospitality students, foodservice industry patrons, and society as a whole (Borchgrevink, Sciarini, & Borchgrevink, 2010). Once equipped with a more detailed understanding of this area, academia and industry professionals may better approach the issue and lower potential risks for all parties involved. Therefore, the purpose of this study was to

investigate the alcohol use experiences of hospitality students working in the foodservice industry, and their familiarity with alcohol abuse prevention measures both at work and at college. In order to understand these phenomena, first the impact of alcohol abuse on the workplace will be examined, then the impact of alcohol abuse on the foodservice industry specifically will be explored. After gaining an understanding of these issues, alcohol abuse among college students in general and then hospitality students specifically will be evaluated. Finally, a review of the alcohol abuse prevention measures literature will be conducted.

LITERATURE REVIEW

Impact of Alcohol Abuse on the Workplace

Aside from the health and mental consequences of alcohol abuse at the individual level, this behavior has been linked to several negative impacts in the workplace (United States Department of Labor, 2007). Workplace impacts include, but are not limited to, decreased performance, and increased work-related accidents and injuries, healthcare costs, absenteeism, turnover, and undesirable behaviors (i.e. violence, theft, etc.) (Frone, 2003; Larsen, Eyerman, Foster, & Gfroerer, 2007; SAMHSA, 2009; Zhu, 2008).

Legal liabilities from condoning, or even encouraging, alcohol abuse in the workplace may have serious consequences. These consequences include criminal penalties for providing alcohol to underage persons (F.S. §562.11, §562.111), liabilities for injuries or damages to third parties resulting from acts of an intoxicated employee (Adams, 1986; Cannizaro v. Marinyak, 2014; Childers v. Shasta, 1987; F.S. §768.125; Sandner, 2002; Verdeur v. King Hospitality, 1994), injuries suffered by an intoxicated employee (Yoshinaga, 1992), and injuries suffered by a co-employee due to actions of an intoxicated employee (Patton & Campbell, 2003). The business may be liable for an employee's injuries if workers' compensation benefits are denied for an injury or death caused by an employee's intoxication (Wheeler, 2006; McCarty v. Workmen's Comp. Appeals Bd., 1974) and the employer is required to provide rehabilitative treatment for an alcoholic employee (Campbell, 2010; Johnson, 2007). The employer may even be liable for injuries to third parties caused by an employee driving home in a fatigued condition if the employer knew that the employee was consuming alcohol at work (D. Houston, Inc. v. Love, 2002; Ingham, 2010) or if the employer sponsors a social event at which the alcoholic employee is furnished alcohol and subsequently injures a third party (Chastain v. Litton Systems, Inc., 1982). The employer will be liable for injuries to third parties if the employer entrusted a motor vehicle to an employee who was known, or should have been known if properly supervised, to be intoxicated while driving (Parker v. Fox Vacuum, Inc., 1987; Swicegood v. Cooper, 1995).

Alcohol Abuse in the Foodservice Industry

Many studies have focused on foodservice employees exhibiting high levels of alcohol use, alcohol abuse and alcohol dependency (Corsun & Young, 1998; Frone, 2003; Larson et al., 2007; Moore, Ames, Duke, & Cunradi, 2012; Moore, Cunradi, Duke, & Ames; 2009; Zhu, 2008).

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These high levels of employee alcohol consumption in the foodservice industry have been attributed to several factors, including a relatively young labor pool, a work schedule including late-night shifts, low management surveillance, a work culture with norms of 'having an end-of-shift drink' or 'going out after work', and availability of alcohol in the workplace (Kjaerheim, Mykletun, Aasland, Haldorsen, & Anderson, 1995; Kjaerheim, Mykletun, & Haldorsen, 1996; Moore et al., 2012; Murray, 2009; Spector, 2001; Zhu, 2008; Zhu, Tews, Stafford, & George, 2011).

It has been suggested that alcohol abuse may be a learned behavior for employees in the foodservice industry, as the introduction to a work environment where co-workers engage in such behavior may increase an individual's likelihood to do so, as well (Kjaerheim et al., 1995; Kjaerheim et al., 1996). While it may be true of any industry that an individual who is introduced to an environment in which there is a heavy drinking culture may increase drinking behavior, many previous studies support the proposition that the foodservice workplace influences employees to participate in heavy alcohol use (Larsen, 1994; Leigh & Jiang, 1993; Mandell, Eaton, Anthony, & Garrison, 1992; Zhang et al., 1999; Zhiwei & Snizek, 2003). In context, working in the foodservice industry may encourage high levels of alcohol use and abuse among hospitality management students as this is the field in which they are employed, interning, or seeking employment. This concept was central to the development of the second research question that drove this study (presented below).

Alcohol Abuse among College Students

SAMHSA (2013) reports that young adults (ages 18-22) who were enrolled full-time in college were more likely than those not enrolled full-time in college to participate in current alcohol use (60.3%), binge alcohol use (40.1%), or heavy alcohol use (14.4%), as opposed to 51.9%, 35.0%, and 10.7%, respectively. This is indicative of a pattern of higher use among full-time college students that has remained consistent since 2002.

The National Institute on Alcohol Abuse and Alcoholism (NIAAA) estimates that four out of five college students in the United States drink alcohol, approximately half of which engage in binge drinking (2013). The importance of addressing heavy episodic drinking among young adult populations has been well documented, as such behavior is accompanied by numerous health and safety issues (Anderson & Mathieu, 1996; Barth, Graves, & Hopper, 1994; Hingson et al., 2002; NIAAA, 2007; Perkins, 1992; Presley, Meilman, & Cashin, 1996). Jayson (2011) suggests that college students' continued alcohol abuse despite knowledge of the negative effects indicates a need for continued exploration of student alcohol consumption in general.

With regards to hospitality students in particular, previous studies on alcohol use and abuse have yielded conflicting results. Studies have found evidence that hospitality students display higher levels of alcohol consumption than their non-hospitality counterparts (Borchgrevink, Sciarini, & Borchgrevink, 2010; Larsen, 1994). Specifically, previous literature has found evidence of higher levels of alcohol consumption among hospitality students as compared with students from other majors, though the results were inconclusive (Borchgrevink, Sciarini, & Borchgrevink, 2010). Based on AUDIT scores, it was found that hospitality majors were at a statistically significantly moderately higher risk for heavy alcohol consumption than were the students from other majors. Additionally, one particular study found that hospitality students had a higher rate of injuries because of drinking behavior and they reported greater incidents in which they consumed six or more drinks in a single sitting. They also reported being unable to stop drinking once they had

started drinking (Borchgrevink, Sciarini, & Borchgrevink, 2010). The two samples in this study were comprised of hospitality students and students from all other majors, and the hospitality students reported higher drinking rates on all of the AUDIT measurement items with the exception of 'failing to do what was expected and needed' (Borchgrevink, Sciarini, & Borchgrevink, 2010).

However, other studies have revealed evidence that no such significant difference exists between the two groups (Larsen & Jorgensen, 2003; Kitterlin, Tanner, & Agrusa, 2012), or that students do not perceive employee alcohol abuse in the workplace as an important workplace issue (Weaver, Choi, & Kaufman, 1997). These conflicting results on such an important topic for such a vulnerable population demonstrate a need for further investigation in this area.

Alcohol abuse statistics among college students combined with those among foodservice workers was used to develop the first research question that drove this study (presented below).

Alcohol Abuse Prevention Policies

Examining alcohol awareness programs has been a concern for hospitality educators since the first issue of *Journal of Hospitality & Tourism Education* (originally *Hospitality & Tourism Educator*). Alcohol awareness programs were sweeping the U.S. and collegiate educators were responding by developing responsible hospitality curricula for front-line staff and management (Peters, 1988). The educators' goals were to incorporate the importance of hospitality in their establishment, to strengthen human resource skills for carrying out the new legal guidelines, and to find opportunities for boosting profitability in spite of these new regulations. The focus was on the hospitality consumer, not the employee.

In the workplace, the efficacy of employee prevention or assistance programs has remained relatively untested in the foodservice industry (Zhu, 2008) —the focus has been primarily on merchant and consumer policy enforcement (Giesbrecht, Bosma, Juras, & Quadri, 2014). In the workplace in general, such programs have been found to aid in discouraging problem behaviors (Ames, Grube, & Moore, 2000; Bennett & Lehman, 1998; Bennett, Lehman, & Reynolds, 2000; Roman & Blum, 2002). Previous research has revealed that employee awareness programs assist employees with alcohol abuse problems by raising awareness among individuals in the organization of the risk of alcohol abuse behaviors (Roman & Blum, 1996; Roman & Blum, 2002; Sonnenstuhl, 1996). In short, there is a great deal of evidence to support the effectiveness of workplace prevention and assistance programs. An understanding of employed hospitality students' awareness of extant prevention policies was pivotal to the development of the third research question that drove this study (presented below).

The impact of alcohol abuse in the workplace as a whole, and the foodservice industry more specifically, was examined in order to better understand these issues. Additional information on alcohol abuse habits among college students and hospitality students was gathered to determine whether any concrete information existed comparing drinking behavior of hospitality majors to other majors. Finally, a look into alcohol abuse prevention policies was explored to see what information existed. All of this information led to the formation of three research questions.

Research Questions

A variety of undesirable behaviors are attributed to alcohol abuse, both in the workplace and in society. The literature provides evidence that foodservice industry employees engage in higher levels of alcohol

use than employees in other industries. A second group found to engage in higher levels of alcohol use and abuse is college and university students. Further, Zhu (2008) found that a consistent risk factor for alcohol abuse among foodservice employees was holding multiple jobs. For many, being a full-time student is considered a job; this would reasonably place the working full-time student in this "holding multiple jobs" category. Thus, full-time students who are working may be at a greater risk of developing alcohol abuse behaviors. This provokes the inquiries, "What are the drinking behaviors of hospitality students working in foodservice?" and "What is being done to mitigate this two-fold risk of developing alcohol abuse behaviors?" Based on a review of the related literature, and the purpose of the study, the following research questions were formed:

1. What are the alcohol use behaviors of hospitality management students who are working in the foodservice industry?
2. How did entering the foodservice industry affect students' alcohol use patterns?
3. What experience do hospitality students who are also foodservice employees have with alcohol abuse prevention policies, both in the foodservice workplace and at college?

METHODS

Sample

A sample of 30 participants was targeted by emailing a call for participants to all undergraduate students enrolled full-time in a hospitality and tourism management program in a large urban area in the southeastern United States; 30 participants were targeted because this is a sample size generally agreed upon to be sufficient for qualitative studies of this nature (Bogdan & Biklen, 2007; Creswell, 2007). Participants were recruited using university email listservs. The requirements for this study were: (1) a person must be 21 years of age or older, (2) currently employed in the foodservice industry for at least three months, and (3) currently enrolled full-time as a hospitality management student. A time period of three months for the comparison portion was chosen with the thinking that a three-month time period is similar to the general 90-day probationary employment period set forth by both the Workplace Relations Act of 1996 and the Employment Relations Amendment Bill that many establishments will use to determine rather or not to extend continued employment. It stands to reason that if establishments can make an evaluation of work performance behavior over 90 days, that this study can make reasonable deductions regarding participant behavior. This approach was taken in previous studies of foodservice industry employees (Kitterlin, 2010; Stancliffe, 2001).

The first 30 qualified respondents were allowed to participate; in the event that a respondent did not qualify for participation, or opted out of the interview prior to completion, they were not included in the sample. After completing these first 30 interviews, the researchers felt confident that data collection had reached theoretical saturation (Morse, 2004). Theoretical saturation is achieved in qualitative studies when no new data concepts emerge, and therefore, no further data is needed. After the first 25 interviews, the researchers noticed informational repetition as no new concepts were emerging from the data. This redundancy was determined by checking the working list of codes and seeing that no new codes were being created. However, the last five interviews were conducted to ensure saturation was being achieved. Similar studies across several disciplines have employed this technique and achieved saturation with as many or fewer respondents (Berdychevsky, Poria, & Uriely, 2013; Drake, 2013; Leo, 2013; Mustafa, Wood, Butler, & Elwyn, 2014; Notley, Holland, Maskrey, Nagar, & Kouimtsidis, 2014).

Data Collection

Responses were collected through the use of 60 minute in-depth interviews prompted by specified open-response questions (Bogdan & Biklen, 2007). A single research assistant who was trained in qualitative in-depth interviews conducted the interviews with all participants. The interviewer conducted these interviews at times that were convenient for the participants in a private office at a university. The interviewer had no influence over the interviewees and none of the students who participated in the study were students of the professors who were involved in the study.

Interview question development was driven by the purpose of the study, the research questions, and a review of the associated literature. IRB approval was obtained, and participation was voluntary and confidential. Prior to the launch of this study, a pilot test was conducted by interviewing five hospitality and tourism management students currently enrolled in the foodservice industry. Afterwards, each interview question was discussed as to how well the participant was able to understand the question, how comfortable the participant felt answering the questions honestly, and what compensation a participant would expect for participating in the study.

Incentives of \$50 were offered for participation. This incentive amount was deemed suitable based on incentives provided in similar studies. In their analysis of research studies from across the U.S. in which money was offered to research participants, Grady, Dickert, Jawetz, Gensler, and Emanuel (2005) found only 16.5 percent of studies offered less than \$50. It was determined that \$50 was appropriate, and that this amount would not alter the participant's judgment or ability to understand any risks involved in participation. The \$50 participant compensation offered in this study is the same compensation amount offered in other studies of substance use behavior among different populations (Korcha, Polcin, Evans, Bond, & Galloway, 2014; Moll & Kitterlin, 2013; Schafer et al., 2010).

Prior to beginning the final interviews, participants completed a consent form. The participants were then asked to describe their experiences with alcohol use as an undergraduate hospitality management student both before and after entering the foodservice industry (i.e. age of initiation, context of initiation, current use patterns, perception of attitudes among fellow foodservice workers regarding alcohol use, and experiences with use and prevention efforts/policies). Sample questions included: (1) Describe the first time you used alcohol; (2) What type of efforts or messages have you seen at work with regards to alcohol use?

Analysis

Each interview was audio-recorded then transcribed verbatim, and each member of the research team, including the interviewer, independently read, analyzed and coded the data using inductive thematic analysis; reliability was strengthened by these coding procedures (Braun & Clarke, 2006; Creswell, 2007). Data analysis occurred in several steps. First, all research team members read the entirety of the interview transcripts to gain a better understanding of the data. Next, codes that described the content or meaning of the text were used to segment it. Then the researchers compared their independently derived codes and came to an agreement on broad themes into which each of the codes could be categorized. The researchers agreed on and identified common and overlapping themes that were then combined into final themes; 100 percent agreement had to be achieved by the research team in order for a theme to be finalized. Codes and themes are provided in Table 1.

Table 1: Themes and Codes

Theme #	Theme	Code Letter	Related Codes
1	At-Risk Drinking Behavior	A	Alcohol use in past 30 days
		E	Daily alcohol use
		F	Daily use of two or more drinks (at risk)
2	Employment Effect	B	Alcohol use increase after employment
		G	Alcohol use same after employment
		C	Alcohol use cited due to work issue
		Q	Work stress/guests
		I	Late work hours
		O	Drink to relax after work
		H	Drink with tip money/cash
		K	Alcohol use with co-workers
3	Absent Prevention Awareness	N	Alcohol provided by co-worker/supervisor/guest
		L	Not aware of work policy
		M	Not aware of college policy
		J	Not aware of policy enforcement
		P	Policy training
		D	Collateral materials (poster/flyer)

Within-design consistency, conceptual consistency, and consistency of inferences with each other within the study were used to uphold interpretive rigor (Tashakkori & Teddlie, 2002). Internal validity was strengthened by establishing a clear research framework, and by pattern matching through the use of research questions that were developed from the underpinning literature and defining constructs of the study. Construct validity was strengthened via feedback from the pilot test that was incorporated. External validity and generalizability was strengthened through the use of semi-structured interview during the data collection process. Structured interview questions defined in the protocol and the selection criteria for participation and the sampling method were delineated prior to the study. Additionally, multiple participants were interviewed for this study.

Reliability was strengthened in three ways. First, protocol was developed prior to entry in the field, which ensured that the questionnaire items and interview questions/measures were consistently presented to all participants. Next, inter-rater reliability and a rigorous coding procedure were established through the comparison of initial coding results from the first interview, as each researcher coded the initial findings separately and compared responses for agreement. Finally, multiple researchers evaluated the questionnaire responses and interview transcripts to further ensure inter-rater reliability, agreement, and consistency (Crawford, 2013).

RESULTS AND DISCUSSION

The study sample consisted of nine males and twenty-one females, ages 21-23 (mean = 21.4 years of age), from a variety of ethnicities: seven African American, four Asian, nine Hispanic, and ten White/Caucasian. A comparison of this sample's demographic mix was found to be representative of the demographic mix of college students enrolled in this university program by comparing it to the mix of total student enrollment in the program reported by the university. All students were enrolled full-time in a hospitality management undergraduate program, and all were currently working in the foodservice industry. Positions included: baker, bartender, cashier, chef, food-runner, hostess, line cook, server, and restaurant manager. Table 2 provides a profile of participants.

The participants in this study indicated that heavy alcohol use was normal practice among full-time undergraduate students working in the foodservice industry. Evidence supporting these claims was

apparent in three major themes: (1) at-risk drinking behavior; (2) employment effect; and (3) absent prevention awareness. Representative accounts of employees are provided below. It should be noted that all participants reported having tried alcohol at least once prior to entering college and prior to entering the foodservice industry; no assumptions can be made that either college or the foodservice industry caused participants' initiation to alcohol.

Theme 1: At-risk Drinking Behavior

All participants can be categorized as current alcohol users according to SAMHSA, as they all had used alcohol within the past 30 days. More than half of the participants (17) reported daily alcohol intake of two or more drinks per day, which classifies them as 'at-risk' or 'heavy drinkers' according to the NIAAA, as that would exceed the 14 drink per week threshold, while another eight reported five drinking occasions per week in which they consumed two or more drinks per occasion, which brings them close to being 'at-risk' for men and 'at-risk' for women. This places the majority of participants in the National Institute on Alcohol Abuse and Alcoholism's (2013) category of 'at-risk' or 'heavy drinkers,' and at risk of developing alcoholism and other mental and physical problems; the criteria for 'at-risk' drinking being four drinks on any day or 14 drinks per week for men, and three drinks on any day or seven drinks per week for women (NIAAA, 2013). This prevalence of heavy alcohol use is consistent with the many previous studies that found foodservice employees to exhibit higher levels of alcohol use, alcohol abuse and alcohol dependency (Frone, 2003; Larson, et al., 2007; Moore, Ames, Duke, & Cunradi, 2012; Moore, Cunradi, Duke, & Ames; 2009; Rowley & Purcell, 2001; Zhu, 2008). Further, this alcohol usage rate greatly exceeds estimates from SAMHSA (2013) on rates of heavy alcohol use among U.S. college students overall (estimated at 14.4%).

Theme 2: Employment Effect

The vast majority (27) of participants reported that their alcohol use had increased after entering the foodservice industry; the remaining three participants indicated that their alcohol use had remained the same. This increase, however, could not be provided a standard definition, as participants reported a range of drinking behaviors both before and after entering the industry. For example, one participant reported an increase from zero drinks per week to seven drinks per week, while another reported an increase from seven drinks per week to twenty drinks per week. More than half of these respondents cited 'work issues' as a cause for their increased drinking behavior, such as

Table 2: Participant Profile

Participant #	Gender	Age	Ethnicity	Employment Position	Employment Establishment	Employment Status
1	Female	21	Hispanic	Bartender	Full-service Restaurant	Part-time
2	Female	21	White/Caucasian	Server	Full-service Restaurant	Part-time
3	Female	21	African American	Hostess	Full-service Restaurant	Part-time
4	Male	21	White/Caucasian	Server	Full-service Restaurant	Part-time
5	Male	22	Hispanic	Bartender	Bar/Lounge	Part-time
6	Female	21	White/Caucasian	Baker	Resort Property F&B Outlet	Part-time
7	Female	22	African American	Line cook	Full-service Restaurant	Part-time
8	Female	21	White/Caucasian	Server	Full-service Restaurant	Part-time
9	Male	21	Hispanic	Cook	Full-service Restaurant	Full-time
10	Female	21	Asian	Server	Full-service Restaurant	Part-time
11	Male	22	African American	Food runner	Full-service Restaurant	Part-time
12	Female	21	Hispanic	Bartender	Full-service Restaurant	Part-time
13	Female	23	Hispanic	Server	Full-service Restaurant	Part-time
14	Female	22	White/Caucasian	Bartender	Bar/Lounge	Part-time
15	Female	21	African American	Server	Full-service Restaurant	Part-time
16	Male	21	White/Caucasian	Server	Full-service Restaurant	Part-time
17	Female	21	Asian	Hostess	Full-service Restaurant	Part-time
18	Female	22	White/Caucasian	Line cook	Resort Property F&B Outlet	Part-time
19	Female	21	Asian	Server	Full-service Restaurant	Part-time
20	Female	21	African American	Hostess / Cashier	Resort Property F&B Outlet	Part-time
21	Male	23	White/Caucasian	Chef	Full-service Restaurant	Full-time
22	Female	22	White/Caucasian	Bartender	Full-service Restaurant	Full-time
23	Male	23	Hispanic	Restaurant manager	Full-service Restaurant	Full-time
24	Male	21	White/Caucasian	Line cook	Full-service Restaurant	Part-time
25	Female	21	African American	Cashier	Resort Property F&B Outlet	Part-time
26	Female	21	Asian	Server	Full-service Restaurant	Part-time
27	Male	21	Hispanic	Bartender	Full-service Restaurant	Part-time
28	Female	22	Hispanic	Bartender	Full-service Restaurant	Part-time
29	Female	21	Hispanic	Hostess	Full-service Restaurant	Part-time
30	Female	21	African American	Server	Full-service Restaurant	Part-time

stress, late hours, availability of cash on hand, and the nature of the work itself:

When you work on your feet all day you get off and you just want to relax. So, you can either go to sleep, or you can go out and have a drink. Or you can even just go home and instead of going to sleep you can have a drink to relax – have a nice drink before bed (Male, 21, Server).

In the service industry you're basically all in the same situation and you work with the same people every day, and it's stressful, so afterwards you all want to drink, and you have money because you're paid the day of because you get tips. So it's very often that we all party together (Female, 21, Hostess).

This finding adds to the conflicting body of knowledge on hospitality student drinking behaviors, especially the findings of a recent study that saw no difference in the alcohol use behaviors of hospitality students with or without foodservice industry work experience (Kitterlin, Tanner, & Agrusa, 2012). Separately, it should be noted that this also supports previous reports that having cash-on-hand, or tips, contributes to foodservice employee alcohol use (Zhu, 2008; Zhu, Tews, Stafford, & George, 2011).

Another cause cited by many participants was the aspect of serving the public; participants felt that providing customer service and handling guest issues and conflicts provided a level of stress that prompted them to self-soothe both during and after their work shifts

with alcohol use:

If it's a hard night and I have terrible customers I'll go to the bar during my shift and get a drink from the bartender (Male, 21, Server).

When you work with people you just have to have a drink to relax (Male, 22, Food runner).

Some participants actually felt encouraged to drink at work, be it from co-workers, management, or vendors/suppliers:

Being in the industry and exposed to it – [there is] more drinking in this industry than in other industries. You have meetings with suppliers and vendors, and them wanting you to try samples. All the wine and liquor tastings at work (Male, 23, Restaurant manager).

These findings would agree with the tenants of availability theory; in context, there is an assumption that the use of alcohol will increase if alcohol is more available, and the easier a substance is to acquire, the more it will be consumed among a given population (Saunders & Aasland, 1987). This phenomenon was observed by Chaloupka and Wechsler (2004) when student binge drinking significantly increased as did the number of alcohol purchase outlets near campus. In an industry like foodservice, where alcohol is abundantly present, it stands to reason that availability theory can explain some of this abusive alcohol behavior.

Workplace norms may also play a role in the explanation of this workplace drinking behavior. Upon becoming a member of an

organization, the employee begins a formal and informal socialization process during which they identify what constitutes acceptable behavior in the workplace (Victor & Cullen, 1987), and develops an understanding of their cohorts' collective attitudes, behaviors, and beliefs deemed acceptable; these are the workplace 'norms'. Sample responses that support this logic are as follows:

I believe it increased a lot because everybody after the shifts is like "hey let's go to a bar and get drunk" (Female, 22, Server).

Because after work everyone gets together and has beers – it's just normal to drink after work (Male, 21, Cook).

Evidence shows that strong workplace norms play a large role in influencing or deterring certain workplace behaviors (Hammer, Saksvik, Nytro, Torvatn & Bayazit, 2004). In previous studies, workplace norms have been found to be a strong predictor of workplace alcohol use (Ames & Grube, 1999; Bacharach, Bamberger & Sonnenstuhl, 2002; Stubbs, 2001). Stubbs (2001), for example, found that drinking while working was considered normal for bartenders by staff, management, and clientele. If foodservice industry employees see at-work alcohol use as normal, they may be more inclined to engage in such.

Bandura's (1977) social learning theory posits that behavior is influenced by a combination of environmental (social) and psychological (cognitive) factors. In context, if an individual enters into a work or social circle where heavy alcohol use is accepted, rewarded, and/or encouraged, they will be more likely to adopt this behavior; thus, the new foodservice employee 'learns' alcohol abuse and perceives it as normal.

This second theme is consistent with the research findings on hospitality student alcohol perceptions over the years. Lundberg (1994) identified that undergraduate hospitality students perceived drinking alcohol after work as acceptable behavior.

Theme 3: Absent Prevention Awareness

The final theme that emerged was that participants had little or no knowledge of any alcohol abuse prevention policies or messages at either college or in their places of employment in the foodservice industry. Two participants reported having been cautioned against alcohol use and abuse upon moving into their dormitories, and two participants reported having seen flyers handed out in the student center and posters located within the student health service center; the remaining twenty-six participants reported no communication from their college about alcohol use or abuse.

Only three of the thirty participants reported having seen any evidence of such at work, which included: (1) being told not to drink at work during orientation; or (2) seeing a poster or being given a flyer every six months, but there being no message or dialogue with supervisors or human resources staff.

At orientation at one of my jobs they said that if you have a problem you could call a hotline, and they gave us the number. Also, there was a poster in the break room. But that's really it. Posters don't really help as much as a different option would – don't just tell me I have a problem, offer solutions and alternatives (Male, 21, Bartender).

The remaining twenty-seven participants reported having no knowledge of any such workplace policy, prevention measures, or assistance programs.

While the effectiveness of workplace prevention or assistance programs has remained relatively untested in the foodservice industry (Zhu, 2008), in general such programs have been found to assist in the deterrent of problem behaviors (Ames, Grube & Moore, 2000; Bennett & Lehman, 1998; Bennett, Lehman & Reynolds, 2000; Roman & Blum, 2002). A study of hospitality students identified that while a large majority of the survey's participants felt that reducing portion size, exercise, and daily fruit and vegetable consumption were important dietary behaviors, less than a third felt it was important to consume alcohol in moderation (McArthur & Chandler, 2003).

Previous studies have found support for employee awareness programs in helping employees with alcohol abuse problems, and raising awareness among individuals in the organization of the risk of alcohol abuse behaviors (Roman & Blum, 1996; Roman & Blum, 2002; Sonnenstuhl, 1996). In short, there is a great deal of evidence to support the effectiveness of workplace prevention and assistance programs. As indicated above, participants were not aware of any such assistance in place at their work or college. While these policies and programs may well exist, they cannot be effective if the intended audience is unaware of their presence.

CONCLUSION AND APPLICATIONS

According to Frone (2013) employee alcohol use in the U.S. workplace is more prevalent than drug use, more damaging to the work organization, and should be a more glaring issue for employers than drug use. Compared to the aforementioned rates of other U.S. college students reported by the National Institute on Alcohol Abuse and Alcoholism (2013), this study found hospitality students working in foodservice to exhibit much greater heavy and binge drinking activity. From the information obtained in this study, it can be assessed that hospitality student foodservice employees are being subjected to an environment where heavy alcohol use is not only prevalent, but accepted, and even celebrated. This phenomenon presents serious safety implications for all foodservice operators, employees, and patrons, both on premise as well as outside of work.

Additionally, alcohol abuse prevention policy awareness appeared to be virtually nonexistent among hospitality management students. It should be noted that while alcohol abuse policies and prevention measures may exist, it was clear that the majority of participants were unaware of them. A review of the university student handbook gave proof that a substance abuse policy indeed exists at the university level, and was available in writing to students. This lack of awareness, however, is evidence that a) students are not reading this information, or b) the message is not resonating with students.

These findings indicate a need for stronger or more frequent message delivery, both at the university and program levels. Suggestions include an increase in alcohol abuse awareness on university campuses, and through multiple and dynamic outlets, such as social media. Understanding the multiple consequences of alcohol abuse from a variety of perspectives, in addition to promoting responsible policies for the sale, service, and consumption of alcoholic beverages is an important part of hospitality education curriculum (Barth, et al., 1994; McArthur & Chandler, 2003). Otherwise, academics are negligent in their roles as educators, as they may be sending students ill-prepared into a high risk work environment. Offering or requiring a ServSafe Alcohol® course for undergraduate hospitality programs could increase hospitality students' understanding of alcohol, to prepare them for job challenges and better personal decision-making.

With regards to workplace alcohol use and alcohol abuse prevention measures, participants' hesitation and unwillingness to disclose their

places of employment made it impossible to determine if the policies were in actual existence, as well as how these policies and messages were being disseminated into the workplace. Further, previous studies have found that perceived availability of alcohol at work was positively correlated with work-related drinking. Perceived availability of alcohol decreased when policy enforcement increased, as well as when support for employee assistance programs (EAPs) increased (Ames, Grube, & Moore, 2000). This finding may indicate a need for greater workplace policy communication and enforcement, as well as education and assistance programs in the foodservice industry.

The legal issues regarding control of alcohol consumption in the workplace or in college require vigilant supervision, testing and treatment, all consistent with the mandates of the Americans with Disabilities Act (ADA) and personal privacy rights (Hartunian, 2002; Lake & Epstein, 2000; Menikheim & Trelfa, 2004). Further research into methods to accomplish control within legal mandates and restrictions is an important avenue for further study and recommendations of best practices (Johns, 2007).

Limitations and Future Research

The results of this study should be interpreted with caution in the context of the following limitations. First, the small sample size, uneven distribution of male and female participants, and demographic mix of participants do not allow for the generalization of findings to the entire population of hospitality students working in foodservice. Future research should employ quantitative data collection methods and/or a longitudinal design; such studies should also attempt to quantify 'increase' in drinking, as this study could not provide an average percentage for increase in participant drinking behavior. Second, it should be noted that this particular hospitality management program does not require any type of responsible alcohol service training or certification, such as the ServSafe Alcohol® program. Practical implications include the incorporation of such programs into all hospitality curricula. Future research should be conducted with students in programs with such training and certifications in place to determine if results differ. Third, this study relied upon self-reported data on a sensitive topic and sometimes illegal activity (i.e. underage drinking), which may have resulted in participants not being entirely forthcoming with their consumption. Additionally, because participation occurred on a voluntary basis, participant self-selection may have occurred, thus responses may not be representative of the general population for study. Finally, the finding that students were unaware of prevention measures at work or college call for a need for further investigation as to what policies are currently in place, and how they can be more effectively communicated to the intended audience. Whatever the course of investigation, it is the duty of academics to improve upon the current alcohol abuse phenomenon being experienced by hospitality students and foodservice employees.

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ETHNIC FOOD IN THE JOURNEY OF INTERNATIONAL COLLEGE STUDENTS IN THE UNITED STATES

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ABSTRACT

The purpose of this study was to investigate the importance of ethnic food to international college students in the U.S. An online survey was developed through reviewing the relevant literature, conducting focus groups, and administering a pilot study. The population of this study consisted of international students enrolled in universities across different regions of the U.S. Four hundred and eleven (411) questionnaires were received, 269 of which were usable. This research has discovered that ethnic food is important to international students and that the inclusion of ethnic food into on-campus dining options is a competitive advantage for universities who provide this service over those who do not. The study has also found that university administrators should pay more attention to providing ethnic food options in on-campus dining services. In addition, the study concluded that ethnic food operators need to focus on certain ethnic food items that international students consider when they dine out.

Keywords: International Students, Recruitment, Dining Habits, Ethnic Food

INTRODUCTION

When international students travel to foreign countries, they undergo what is termed acculturation. This is because international travel inherently entails dealing with foreign cultures. The acculturation process engenders a change within the international travelers, which occurs as a result of their direct and continuous contact with people from different cultures (Redfield, Linton, & Herskovits, 1936). Nevertheless, any claim to acculturation adjustment would be incomplete without attention to food consumption; this is especially important considering the centrality of food to one's wellbeing (Locher et al., 2005). Food is a cultural symbol (Verbeke & Lo'pez, 2005). It is a cultural trait that humans learn throughout their primary development in childhood and a trait that consumers change with great reluctance in older age (Cervellon & Dube', 2005). All previous studies concluded that food habits and practices represent a central element of culture, and that it is anticipated that travelers would struggle to break away from their habituated food choices. This was confirmed in a more recent ethnographic study of the international student adjustment process, in which food emerged as a major research category (Brown, 2009). It was shown that dietary habits were of great importance both emotionally and physically; it was also an aspect of student life that was least open to change.

Ethnic food refers to the expression of food in terms of attitudes, values, behaviors and beliefs of a particular culture that express cultural traditions, heritage, religion, or national origin (Mora, 1998). Ethnic restaurants not only function as eating establishments, but also serve as "cultural ambassadors" that communicate the essence of a culture to local customers through its menu (Wood & Munoz, 2007). In many ethnic restaurants, the owners have roots in the original

culture that their restaurant represents. One example of cultural and ethnic diversity is the success of ethnic food restaurants in the American foodservice market. In 2009, ethnic food sales in the U.S. surpassed \$2.2 billion, and they were expected to increase by 20% by 2014 (US Ethnic Food Market, 2005). America's ethnic food market generates \$75 billion in annual sales; almost 65% of this is attributed to the restaurant sector of the foodservice industry (US Ethnic Food Market, 2005).

According to Onuorah and Ayo (2003, p. 235), dining habits are determined by "values, beliefs, and environmental and religious circumstances, all of which are products of tradition, culture, and contacts." The way people prepare and consume their food expresses their cultural values and social system (Murcott, 1982). According to Gochman (1997), culture distinguishes what we eat, how food is obtained, who prepares it, where, when, and with whom it is consumed. People arrange their food dining habits into structured systems according to the cultural system (Counihan, 1999). The ways in which people think about food differ depending on cultural ethnicity. For example, according to cross-cultural studies (Chandon, et al., 2000), French natives consider pleasure an important element in choosing food, while Americans generally consider food a source of energy; food safety is also a critical factor in selecting food. Ethnicity is not only an integral characteristic of an individual, but it is also a process of group identification in which people use ethnic labels [that involve aspects like opinions, cognition, affect, and knowledge] to define themselves and others as well (Rossiter & Chan, 1998; Jamal & Chapman, 2000). The retention of language and food preferences, as well as friendship networks, are among the most accepted dimensions of ethnic identity (Laroche, et al., 1999). Ethnicity affects consumer behavior through personal dress style, musical preferences, recreational activities, and the consumption of food and drink (Bocock, 1993, p.80). These factors have a strong impact on customers, especially in other countries; the unique elements of ethnic foods distinguish them from the local cuisine (Chandon, et al., 2000; Leclerc, et al., 1994). Satia-About, Paterson, Neuthouser, and Elder (2002) indicated that immigrants prefer to eat their traditional cuisine to overcome homesickness or to remember and share their original culture, a statement further supported by Brown (2009) who added that homesickness is accentuated further for those who live alone (for example, students), for whom eating seemed to be a source of nostalgia for a life full of companionship and sharing. Fieldhouse's (1995) suggested that the need for self-actualization is related to an innovative use of food, where new recipes and food experimentation becomes a personal trademark representing one's identity.

The need for obtaining and increasing the consumption of healthy food items is considered as a factor in the increased growth of ethnic foods. Recently in Europe, there has been an increase in the concern of consumers regarding food consumption, diet, health, and food safety (Verbeke & Viaene, 2000; Miles & Frewer, 2001, 2003). Generally, there is an inclination to consume a low fat diet as part of a healthy intake in order to reduce the risk of heart diseases. Previous

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research reveals significant associations between the quality of diet and the availability of healthy food items in stores (Cheadle et al., 1991; Fisher & Strogatz, 1999). Due to the lack of local area food stores, it becomes hard to find many healthy food options, which results in negatively affect dietary habits and contributes to the risk of obesity. The availability of supermarkets has been correlated with more fruit and vegetable consumption, more healthy diets, and lower levels of obesity (Morland et al., 2002a, 2006b; Laraia et al., 2004).

Studies reveal that deteriorated health, including higher levels of obesity and diabetes, is associated with an increased consumption of Western-style food (Burns, 2004; Gordon-Larsen, Harris, Ward, & Popkin, 2003; Himmelgreen, Bretnall, Peng, & Bermudez, 2005; Kedia, 2004; Saleh, Amanatidis, & Samman, 2002). Specifically, research has indicated that sojourners are unlikely to gain weight or be considered obese upon arrival in a western country, but they eventually converge to native-born levels over time (McDonald & Kennedy, 2005). It has been proved that transition to a new culture can lead to substance abuse, a high alcohol intake, altered dietary practices and an increased Body Mass Index (Abra'ido-Lanza, Chao, & Flo' rez, 2005; Gordon-Larsen et al., 2003; Lara, Gamboa, Kahramanian, Morales, & Bautista, 2005; McDonald & Kennedy, 2005). For example, Asian students within in the U.S., who had resided there at least three months before the start of their studies, reported a decrease in the number of meals consumed per day; nearly half of them skipped breakfast more than other meals. Substantial increases were observed in the consumption of fats, salty and sweet snack items, and dairy products, whereas the consumption of meat, meat alternatives, and vegetables significantly decreased. They also dined out less often, but when they did, they chose American fast food establishments (Pan et al., 1999).

Several personal behaviors can influence the health of individuals as a whole. In the U.S., the two main behaviors that have been considered especially harmful to the health of Americans are smoking and the lack of physical activity that results in obesity (Preston, Stokes, Mehta, & Cao, 2014). According to the Centers for Disease Control (CDC), 18 % of deaths in the U.S. in 2000 were attributed to smoking and 15 % were caused by obesity (Mokdad et al., 2004, 2005). The years that students spend at colleges present a dissimilar set of dietary priorities, and unhealthy eating habits often get worse during this time period. When it comes to international students, poor eating habits become even more heightened due to the difficulties and challenges that those students encounter during the adaptation process to the new culture. According to Leong and Sedlacek (1986), adjustment difficulties are more predominant among international students than their U.S. counterparts. As a result, these adjustment difficulties can influence several life aspects of international students such as their psychological and physical health (Wan, Chapman, & Biggs, 1992).

The Institute of International Education's Open Doors 2014 reports that the number of international students attending colleges and universities within the U.S. increased by 7.7 percent to 270,128 during the 2013-2014 academic year, compared to 250,920 during the 2012-2013. International students contribute over \$27 billion to the U.S. economy through their expenditures; these expenditures encompass expenses such as tuition, room and board, health insurance, and other living expenses, according to the U.S. Department of Commerce (IIE, 2014). Higher education is considered one of the U.S. top service sector exports, this is because international students provide monetary outflow to the U.S. economy (IIE, 2014). Since the U.S. is a multicultural and multiethnic nation, this national trend of hosting diverse international students will probably increase (Josiam & Monteiro, 2004; Sukalakamala & Boyce, 2007).

In line with the above notion, previous research has emphasized the importance of internationalizing campuses and the educational benefits stemming from the presence of international students in the U.S. (Jones, 2002; Yang; 2004). From a political perspective, educating the future leaders of foreign countries helps spread the political values of the U.S. and fosters mutual understanding of the U.S. throughout the world (NAFSA: Association of International Educators, 2003). Academically, international students have been recognized as an asset to higher education (Ward, 2002), with prior research suggesting that the presence of international students diversifies a student body with varieties of nationalities, cultures, and languages (Lewis, 2003). In addition, it contributes to classroom diversity, encourages cross-cultural dialogue, and enriches the learning environment and the experiences of domestic students (Hayward & Siaya, 2001; Rai, 2002; Ward, 2002).

Student recruitment and retention is important for academic institutions throughout the world (Yurtseven, 2002). In 2000, Lacina, noted that "if we want to attract and retain international students to our university campuses, we must focus on the students' needs and successes in the American university experience" (p. 26). Research has shown that most American colleges and universities have accepted international students into their programs without really thinking about what they were doing (Goodwin & Nacht, 1983). In these institutions, students are self-selected, and therefore come to the institution by accident or through word of mouth, often/most of the time from either a family member or close friend.

There seems to be an agreement among industry professionals, marketing researchers, and sociologists that customer interactions through word-of-mouth (WOM) can have a major impact on consumer response to a product and that product's advertising (Herr, Kardes & Kim, 1991). Because WOM is an inexpensive and reliable way of transmitting information about products and services, WOM plays an important role in diffusing information through consumer markets and shaping consumer attitudes (Mourali et al., 2005). In addition to being an important outcome in any service context, positive WOM has been shown to be one of the most important factors in attracting international students to higher education (Allen & Higgins, 1994). In a study by Lois Patton (2000), it was found that while many variables such as course offerings, facilities, distance, and fees are important, the major force behind selection criteria is word-of-mouth communication. The core service of a higher education institution, teaching, is intangible (McDougall & Snetsinger, 1990). Intangibility [or the lack of physical evidence for a service] forces a consumer to rely on sources of information such as word-of-mouth recommendations to arrive at purchase decisions (Webster, 1991).

In the same vein, students pay for services in the form of education, therefore, they claim they should be treated like customers (Kanji & Tambi, 1999). Bejou (2005) argues that since it is cheaper to retain existing customers than to attract new ones, it is also more efficient for academic institutions to focus on student satisfaction and retention, rather than undertaking aggressive marketing campaigns designed to attract more students. Bennett (2003) expounds upon this idea by noting how students who withdrawal may damage an institution's reputation through negative WOM comments, which can impact future student recruitment and retention efforts. Like normal customers, students undergo the usual consumption and post-consumption behavior. Therefore, satisfied students will engage in WOM communication, the recommendation of their university to potential students, returning to complete higher degrees (repeat purchase), cooperating with the university by offering placements for current students, giving guest lectures, and becoming valued alumni

(Mavondo, Tsarenko & Gabbott, 2004a). As alumni, they provide financial support, promote the university through WOM, create supportive networks accessible to current and future students, and also provide role models for future student generations (Mavondo, Tsarenko & Gabbott, 2004b). Zeithaml (1988) highlighted that customers' perception of value plays an important role in their purchase decision-making; this suggests that behavioral intentions are consequences of value perception. In essence, when customers have high levels of value perception from their consumer experiences, they are more likely to express positive behavioral intentions.

For a plethora of reasons, ethnic food is important in the lives of international students because it represents a basic part of their culture, history, faith, and individual identity (Eyoum & O'Neill, 2012). As a result, fulfilling the dietary needs of international students on campuses and in surrounding communities should be recognized as a competitive advantage from the perspective of universities. A clearer understanding of the importance and value of satisfying the ethnic diets of international students will give universities valuable insight into how to better satisfy their customers. In turn, this, will help these universities more effectively to fulfill the needs of existing international students and will make their institutions more attractive to future international students. Therefore, in current environments where universities are competing to enrich their campuses in an abundance of ways, the inclusion of providing proper on-campus ethnic food services for students could aid in creating a competitive advantage between universities.

Little empirical research exists on the role ethnic food plays in the journey of international students; food is usually mentioned only incidentally as one of the aspects that students find distressing in their acculturation process (Furukawa, 1997; UKCISA, 2009). There has been little research dedicated to the study of international student eating habits; studies by Henry and Wheeler (1980), Zwingmann and Gunn (1983) and Hall (1995) are rare, but old examples. Given the increase in international student numbers in recent decades, the changing source markets, and changing receiving and origin societies, there is a clear need for more contemporary research that is pertinent to new conditions. However, despite the importance of the international students to American educational institutions [and to the knowledge of the researchers], no previous study has addressed the importance of ethnic food to better accommodate international students in the U.S. This gap in research underscores the purpose of this study, which is identifying the importance of ethnic food to international students at American universities. More specifically, the objectives of this study are: 1) To examine the relationship between ethnic food provision by university on-campus dining options with international student's future behavioral intentions of recommending the university to others and self-reported personal health, 2) To identify the reasons which underline the potential importance attached to ethnic food, 3) To explore the current perceptions about the availability and quality of ethnic food restaurants and retailers, and, 4) To identify ethnic food dining habits of international students in the U.S.

METHODS

Sample

The target population for this study consisted of international students enrolled in universities across different regions of the U.S. The sample was intended to represent the general population of international students as much as possible. The following criteria were used to select participants: 1) must be 19 years of age or older, 2.) currently enrolled in the participating university, and 3) listed by their university as "International Students."

Instrument Development and Focus Groups

Due to the lack of literature on ethnic food in general and from the perspective of international students in the U.S. in particular, two focus groups with 12 international students were conducted to identify pertinent variables for the survey. Several steps were taken to assure students confidentiality. Students were referred to by names of their choosing that were not their original ones, sessions were moderated by the researchers and notes were taken manually. At the beginning of the focus group sessions, participants were informed about the purpose of the study, and they were assured about the confidentiality of the focus group discussions. All focus group sessions were tape recorded and transcribed by the researchers. The total time of the focus group sessions was approximately 90 minutes each. Participants of the focus groups represented several regions around the world. The researchers asked questions, facilitated discussions, and encouraged participation between group members. A list of topics was prepared in advance of the focus group sessions, covering broad ethnic food-related issues such as: the importance of ethnic food to the participants, their ethnic food dining habits, the relationship between ethnic food and future behavioral intentions, the relationship between ethnic food and participants self-reported personal health, and the availability and the quality of ethnic food restaurants and retailers in the areas surrounding participant residences in the U.S. Analyzing the data obtained from the focus group discussions took several steps. First, responses to each topic related to ethnic food were grouped. Then, researchers analyzed responses by looking for key words and themes. This process resulted in identifying clusters of key words in addition to phrases and themes that revolve around the issues that are important. Lastly, significant issues for each related topic were identified. The results of the analysis were used to formulate the survey instruments and questions. The findings of the focus groups were particularly important in the development of the variables used in this study.

Two pilot tests were employed before sending the final survey version: six international students were recruited through emails sent by the researchers and briefed about the purpose of the research, and they were requested to give their feedback. Based on the feedback gathered from the participants about relevance and clarity issues in the survey questions, a number of modifications were made to the survey. These changes included rewriting questions, shortening the length of the survey by combining several questions into one category, and, as a result, the completion time of survey was condensed.

The questionnaire consisted of six sections: a) demographic information, b) availability and quality of ethnic food restaurants and retailers measured on a 5-point Likert-type scale (1= Very Bad, 5= Very Good), c) self-reported personal health measured on a 5-point Likert-type scale (1= Very Bad, 5= Very Good), d) dining habits, e) importance attached to ethnic food measured on a 5-point Likert-type scale (1= Strongly Disagree, 5= Strongly Agree), and f) future behavioral intentions measured on a 5-point Likert-type scale (1= Strongly Disagree, 5= Strongly Agree). The items used in this section were modified from (Zeithaml et al., 1996), and included three items.

Cronbach's Alpha (1951) is among the most commonly used reliability coefficient (Hogan, Benjamin & Brezinkisi, 2000). Cronbach's Alpha testes were computed to evaluate the internal reliability. The results of the Cronbach's Alpha test indicated that all scales measuring the availability and quality of ethnic food restaurants and retailer ($\alpha = 0.807$) and the future behavioral intentions ($\alpha = 0.901$). The Cronbach's Alphas for both measures were above the recommended 0.70 threshold (Nunnally, 1978).

Data Collection and Analyses

Several regions across the U.S. were initially identified as representing the country; subsequently, a list of public universities in each of these regions was prepared. A list of ten universities from each region was selected randomly. The list was sent to the Office of International Education at Auburn University for their assistance in collecting the data. An email was sent from Auburn University's Office of International Education to the forty potential participating universities explaining and inviting them to participate in this study. Ten of them, including Auburn University, agreed to participate. Out of the ten, six universities eventually participated. These universities represent the states of Alabama, Florida, Georgia, Illinois, Indiana, and Texas. The data of this study were collected in collaboration with the Office of International Education at Auburn University. Collecting data took several steps. First, the researcher received permission from the Institutional Review Board (IRB). Secondly, the researcher contacted and coordinated with the staff responsible for international admissions at the researcher's institution and at participating institutions. Thirdly, a cover letter was sent via email by the Office of International Education at Auburn University to participating schools that explained the purpose of this study and contained a link to the survey. Four hundred and eleven (411) questionnaires were received, 269 of which were usable. Returned questionnaires that had one missing answer were not used. The returned questionnaires were coded into the Statistical Package for Social Sciences (SPSS) 21. Descriptive and frequency analyses were used to describe the characteristics of the sample. An independent t-test was used to test the differences between the universities who provide on-campus ethnic food dining services and those who do not and the future behavioral intentions and the personal self-reported personal health. Mean scores and standard deviation were used to interpret the importance attached to ethnic food, examine the current perceptions about the availability and quality of ethnic food, and lastly identify the ethnic food dining habits.

RESULTS

Characteristics of the Sample

Male respondents accounted for 60.2% of the sample. About 35.3% belonged to the age group of 21 to 25 years of age. Moreover, the majority of the respondents 73.2% identified their marital status as being single. In terms of ethnicity, the majority of the respondents were Asian 32.7%. Bachelor Degrees were the highest among respondents 41.6% and approximately 37.5% currently enrolled as Ph.D. students. About 28.3% of the participants indicated they have been in the U.S. for less than one year (Table 1).

Ethnic food provision by university on-campus dining options with international student's future behavioral intentions and self-reported personal health in the U.S.

The majority of the participating universities 66.9% do not have on-campus ethnic food options, and only 33.1% provide such services. An independent sample t-test showed a statistically significant difference in the scores of international students' future behavioral intentions for universities who provide on-campus ethnic food options ($M=4.0524$, $SD=.77508$) and those who do not ($M=3.7500$, $SD=.97573$). This result suggests that the inclusion of ethnic food into on-campus food options is associated with the future behavioral intentions of international students, $t(267) = 2.552$, $p=.011$. The same test was also used to investigate the extent to which the inclusion of ethnic food into university on-campus food options is associated with the self-reported personal health of international students. This result indicated that there is no statistically significant difference between the responses obtained from both types of universities with regard to personal health the inclusion of ethnic food into on-campus food

Table 1. Characteristics of the Sample (n=269)

Characteristics	n	%
Gender		
Male	162	60.2
Female	107	39.8
Age		
Age 20 & Under	25	9.3
21 – 25	95	35.3
26 – 30	85	31.6
31 – 35	43	16.0
36 – 40	12	4.5
41 & Older	9	3.3
Marital Status		
Single	197	73.2
Married	66	24.5
Divorced	2	0.7
Separated	0	0.0
Widowed	0	0.0
Other	4	1.5
Ethnicity		
Asian	88	32.7
Asian-Indian	50	18.6
Black or African American	10	3.7
Caucasian	25	9.3
Hispanic	6	2.2
Latin American	17	6.3
Native American	0	0.0
Middle Eastern	56	20.8
Multi-Ethnic	3	1.1
Other	14	5.2
Highest Education Obtained		
Bachelor	112	41.6
Master	96	35.7
Ph.D.	15	5.6
Post Doctorate	7	2.6
Other	39	14.5
Degree Currently Pursuing		
Bachelor	69	25.7
Master	81	30.1
Ph.D.	101	37.5
Post Doctorate	10	3.7
Other	8	3.0
Amount of Time in the U.S.		
Less than 1 year	76	28.3
1 to less than 2 years	45	16.7
2 to less than 3 years	40	14.9
3 to less 4 years	44	16.4
More than 4 years	64	23.8

options, $t(267) = 1.211$, $p=.227$. Although statistically insignificant, the respondents from universities who provide on-campus ethnic food options ($M=3.26$, $SD=1.061$) indicated higher self-reported personal health than respondents from universities who do not provide similar services ($M=3.09$, $SD=1.091$) (Table 2).

Further analysis of future behavioral intentions

To further understand the role of each item of the future behavioral intentions, additional analysis was conducted. The mean score and standard deviation of each item was calculated. According to the results, all items achieved high mean scores, which indicate that the future behavioral intentions of international students may be associated with the inclusion of ethnic food into university on-campus food options (Table 3).

Table 2. T-Test Analysis of the Inclusion of Ethnic Food in On-Campus, Future Behavioral Intentions (FBI), and Self-Reported Personal Health (n=269)

	N	Mean	SD	t-Value	df	Sig.
Ethnic food availability in university on-campus food court and FBI						
Yes	89	4.0524	.77508	2.552	267	.011
No	180	3.7500	.97573			
Ethnic food availability in university on-campus food court and self-reported personal health						
Yes	89	3.26	1.067	1.211	267	.227
No	180	3.09	1.090			

The importance attached to ethnic food by international students

Excluding faith, all other items have an average score of 3.40 and above, indicating that these items are important. The five most prominent and important ethnic food items were: the relationship between ethnic food and culture 3.99, the role that ethnic food plays in evoking memories of home 3.75, the relationship between ethnic food and national identity 3.54, the availability of ethnic food acts as a remedy for homesickness and ethnic food provides a real sense of belonging were equal with mean scores of 3.51, and ethnic food is related to diet 3.40. The least important attribute was ethnic food as related to faith 2.32 (Table 4).

Availability and quality of ethnic food restaurants and retailers

In regards to the respondent’s perceptions of the availability and quality of ethnic food restaurants and ethnic food retailers that sell ethnic food ingredients, respondents revealed a moderate average of the availability with mean scores of 3.12 for restaurants and 3.04 for retailers. In relation to the availability of ethnic food restaurants, 47.2% of the participants mentioned that the availability of ethnic restaurants is fair, and 24.9% of which indicated that the availability is good. 18.6% of the sample stated that the availability of ethnic food restaurants is bad, around 5.9% mentioned that the availability is very good, and only 3.3% indicated that the availability is very bad. In terms of the availability of ethnic food retailers, 48.0% of the respondents indicated that the availability of ethnic retailers is fair, while 20.1% reported bad levels of availability, and 4.1% indicated that the availability is very bad. About 23.8% of the respondents perceived the availability of ethnic food retailers as good and 4.1 only mentioned it is very good.

With regard to the respondents’ perceptions of the quality of ethnic food restaurants and ethnic food retailers, participants revealed an average perception of the quality of ethnic food restaurants, with mean scores of 3.18 and 3.21, respectively. With regards to the quality of ethnic food restaurants, 50.9% of the respondents indicated that the quality is fair, 26.4% indicated it is good and 5.2% stated that the quality is very good. Among the respondents, 16.4% mentioned that the quality is bad, and 1.1% indicated that the quality is very bad. With respect to the quality of ethnic food retailers who sell ethnic

food ingredients for personal ethnic food cooking, 47.6% of the respondents indicated that the quality of ethnic food ingredients is fair, 31.2% indicated it is good and only 5.2% perceived the quality as very good. Of the respondents, 15.6% of the participants reported that the quality is bad and only 1.5% indicated that the quality is very bad (Table 5).

Availability of ethnic food restaurants and retailers in the areas surrounding university campuses

In terms of the availability of ethnic food restaurants and retailers in the areas surrounding university campuses. Respondents revealed a high average of the availability with mean scores of 1.40 for restaurants and 1.61 for retailers, respectively. A total of 59.9% of the respondents reported that ethnic food restaurants were available in the area surrounding university campuses, whereas 40.1% mentioned that such restaurants were not available. In terms of the availability of ethnic food retailers, 61.3% of the participants indicated that ethnic food retailers were available in the areas surrounding university campuses, whereas 38.7% indicated that ethnic food retailers were not available (Table 6).

Ethnic food dining habits

The majority of respondents reported that they prefer to cook at home 82.9%, and only 17.1% prefer to eat out. In terms of dining companions, 68.8% of the sample prefers to eat out with friends, 17.5% with spouse, 10.4% alone, 0.4% for business, and 3.0% chose other. With respect to how often participants typically eat out, the majority of the respondents 39.4% stated that they eat out once a week followed by those who eat out 2 – 3 times a week 23.4%. 15% of the sample eat out once a month, whereas those who eat out rarely

Table 3. Analysis of Future Behavioral Intentions (n=269)

Scale Items	Mean*	Standard Deviation
I would recommend my university to other international students	3.83	.990
I would say positive things about my university to other international students	3.93	.960
I would be happy to continue my education at my current university	3.79	1.080

*Measured on a 5-point scale, where (1) Strongly Disagree to (5) Strongly Agree

Table 4. Importance Attached to Ethnic Food (n=269)

Rank	Scale Items	Mean*	Standard Deviation
1	Ethnic food is related to my culture	3.99	1.022
2	Ethnic food helps in evoking memories of home	3.75	1.068
3	Ethnic food is related to my national identity	3.54	1.229
4	Ethnic food provides a real sense of my belonging	3.51	1.071
5	The availability of ethnic food is a remedy for homesickness	3.51	1.177
6	Ethnic food is related to my diet	3.40	1.192
7	Ethnic food is related to my faith	2.32	1.226

*Measured on a 5-point scale, where (1) Strongly Disagree to (5) Strongly Agree

Table 5. Availability and Quality of Ethnic Food Restaurants and Retailers (n=269)

	n	%
Availability of Ethnic Food Restaurants (3.12 ± .892)		
Very Bad	9	3.3
Bad	50	18.6
Fair	127	47.2
Good	67	24.9
Very Good	16	5.9
Availability of Ethnic Food Retailers (3.04 ± .876)		
Very Bad	11	4.1
Bad	54	20.1
Fair	129	48.0
Good	64	23.8
Very Good	11	4.1
Quality of Ethnic Food Restaurants (3.18 ± .806)		
Very Bad	3	1.1
Bad	44	16.4
Fair	137	50.9
Good	71	26.4
Very Good	14	5.2
Quality of Ethnic Food Retailers (3.21 ± .807)		
Very Bad	4	1.5
Bad	42	15.6
Fair	128	47.6
Good	84	31.2
Very Good	11	4.1

or daily consist of 10% for both, and only 1.5% chose other. Respondents were also asked to indicate how many miles on average in a month they travel to dine at ethnic food restaurants. A total of 34.6% of the participants mentioned they travel for 5 miles or less and 22.3% indicated that they travel for 25 miles or more. Almost 17.8% travel between 6 – 10 miles, 9.3% travel between 1 – 15 miles, 7.8% travel between 16 – 20 miles, and 8.2% travel between 21 – 25 miles. Participants were asked to report how many miles in a month they travel to purchase ethnic ingredients. 30.5% of the participants travel for 5 miles or less and 23.4% travel for 25 miles or more. About 13.8% travel between 6 – 10 miles, 10.4% travel between 11 – 15 miles, 10.8% travel between 16 – 20 miles, and 11.2% of respondents travel between 21 – 25 miles. Participants were asked to report how much money they spend a month on ethnic food; the majority of the sample 34.2% spend \$51.00 - \$100.00 a month, while 30.9% spend \$50.00 or less. A total of 12.3% of the respondents reported that they spend almost \$101.00 - \$150.00; 7.8% spend \$151.00 - \$200.00; 5.6% spend \$201.00 - \$300.00; 5.9% spend \$251.11 - \$300.00; and only 3.3% spend more than \$300.00 a month (Table 7).

Table 6. Availability of Ethnic Food Restaurants and Retailers in the Areas Surrounding University Campuses (n=269)

	n	%
Ethnic Food Restaurants (1.40 ± 0.491)		
Yes	161	49.9
No	108	40.1
Ethnic Food Retailers (1.61 ± 0.488)		
Yes	104	38.7
No	165	61.3

Inclusion of ethnic food into university on-campus food options and the academic experience

A total of 36.4% of the participants agreed with the statement that says universities should pay much more attention to include ethnic food into their normal dining services, and 32.7% strongly agreed. Only 3.7% of the respondents strongly disagreed and 7.1% disagreed. Participants who neither disagreed nor agreed consisted of 20.1%. In regard to whether the inclusion of ethnic food options into on-campus dining services would have a positive impact on participant's educational experience, 37.2% of the respondents agreed and 26.8% strongly agreed. Almost 4.5% strongly disagreed and 8.2% disagreed (Table 8).

DISCUSSION

It would appear that there is a possibility that Universities who offer ethnic food services into on-campus options are experiencing an enhanced benefit, compared to universities who do not. In fact, spreading positive statements about the university was found to be the most important item related to international students' future

Table 7. Ethnic Food Dining Habits (n=269)

Scale Items	n	%
Dining Habits		
Eat Out	46	17.1
Cook at Home	223	82.9
Dining Accompany		
Alone	28	10.4
With Spouse	47	17.5
With Friends	185	68.8
For Business	1	0.4
Other	8	3.0
Frequency of Eating Out		
Rarely	27	10
Daily	27	10
Once a Week	106	39.4
2 - 3 Times a Week	63	23.4
Once a Month	42	15.6
Other	4	1.5
Miles in a Month Traveled to Dine at Ethnic Food Restaurants		
5 miles or Less	93	34.6
6 - 10 miles	48	17.8
11 - 15 miles	25	9.3
16 - 20 miles	21	7.8
21 - 25 miles	22	8.2
More than 25 miles	60	22.3
Miles in a Month Traveled to Purchase Ethnic Food Ingredients		
5 miles or less	82	30.5
6 - 10 miles	37	13.8
11 - 15 miles	26	10.4
16 - 20 miles	29	10.8
21 - 25 miles	30	11.2
More than 25 miles	63	23.4
Amount Spent on Ethnic Food in a Month		
\$50.00 or less	83	30.9
\$51.00 - \$100.00	92	34.2
\$101.00 - \$150.00	33	12.3
\$151.00 - \$200.00	21	7.8
\$201.00 - \$250.00	15	5.6
\$251.00 - \$300.00	16	5.9
More than \$300.00	9	3.3

behavioral intentions, in addition to the willingness to recommend the university to others. These findings are consistent with the focus group results presented earlier in this study. The results are also consistent with the literature of the Word-of-Mouth and future behavioral intentions. Positive Word-of-Mouth (PWOM) has been recognized as being among the most important factors in attracting international students to higher education (Allen & Higgins, 1994). This is because ethnic food is an essential part of culture, national identity, evoking memories of home, and remedy for home sicknesses. There was no statistically significant difference between responses obtained from universities who provide on-campus ethnic food options and universities who do not provide similar services and the self-reported personal health. This finding is consistent with the finding of (Camillo, Kim, Moreo & Ryan, 2010), who addressed the most popular attributes of Italian cuisine in the U.S., discovering that health benefits were among the least popular attributes. However, this result could potentially be explained with the assumption that health is a personal issue. For some students, it might be an important aspect of their personality and they may know how to keep themselves fit, regardless of whether ethnic food is available to them on-campus or not. In other words, students who pay special attention to their fitness may place less emphasis on the inclusion of ethnic food into on-campus dining options when reporting about their health. Another possible explanation for this finding is that seeking healthy food items does not have to be associated with consuming ethnic food; in other words, not all ethnic food items are healthy. Therefore, people choose healthier food when they travel to a new culture, regardless of whether these food items are ethnic or not. Also, immigrants who consider health an important issue when eating can choose food from other ethnicities. Moreover, it does not have to be from their native dining choices since they want to eat only healthy food regardless of the origin of the food.

With regard to the reasons underlining the potential importance attached to ethnic food, seven items were used. Six of the seven items scored (3.40 and above), namely the relationship between ethnic food and culture, ethnic food helps in evoking memories of home, the relationship between ethnic food and national identity, ethnic food provides a sense of belonging, ethnic food is a remedy for homesickness, and the relationship between ethnic food and diet. The relationship between ethnic food and faith scored the least (2.32). In the focus groups when participants were asked about the reasons why ethnic food was important to them, varied reasons were indicated in the responses. Participants revealed that ethnic food is important to their culture because they connect to it through the food they prepare and consume. They mentioned that they often use their home country food as a means of retaining their cultural identity. Food plays an essential role as a cultural product because it

defines who we are, creating distinctions between us and others. Therefore, students considered their home country food as a way to maintain, distinguish and validate their national identity. In terms of health and diet, there was consensus among the focus group participants that eating ethnic food was one of the ways to preserve their physical health and to avoid weight gain. In fact, many participants indicated that their home country food can be used as a medicine in some situations. Some students stated that they were getting worried about their health because of the high levels of fat and cholesterol in the western food items. Ethnic food was found to be a remedy of homesickness for the majority of participants. They said that ethnic food is associated with home, and it has the ability to reduce feelings of sadness for home. The consumption of home food helps requite for some unavoidable stressors, which means offering them a chance to remember the past happy moments and forget the sad present ones. Some participants indicated that ethnic food is important to them because it is part of their faith; they indicated that they were not allowed to eat all types of food because there are regulations that control their consumption. These empirical findings lend support to the propositions presented in previous studies (Sattia-About, Paterson, Neuthouser, & Elder, 2002; Brown, 2009; Fieldhouse, 1995).

Furthermore, the result provides confirmation to Verbeke and Lo'pez (2005) who indicated that exotic flavor commonly evokes memories of vacations in unusual locations, reflects and strengthens friendships, and promotes openness to new cultures. Given that almost all students who participated in the focus groups have mentioned these links explicitly, the five items that scored the highest were supported by the data gathered from survey of international graduate students in the U.S. The result pertaining to the least scored item, (of faith) is interesting. Faith-related concerns didn't seem as important as the other connections. Multiple perspectives could explain this finding. In the process of acculturation, new immigrants tend to abolish their original cultural identity and seek contact with members of the host community, a phenomenon described as assimilation according to Zagefka & Brown (2002). Applied to the finding of this study, international students may ignore some of their religious concerns when they move to a new culture, or it may be that the foreign circumstances are not conducive to their religious; as a result, they may abandon some religious food habits. It is also possible that faith is less of a concern for international students simply because food that is prepared and served in accordance with their faiths is not available, leading them to accept an alternative type of food.

With regard to the current perceptions held by international students on the availability and quality of ethnic food restaurants and retailers in the U.S., participants reported an overall moderate average of

Table 8. Inclusion of Ethnic Food into University On-Campus Food Options and the Academic Experience (n=269)

Scale Items	n	%
Universities should give much more consideration to include ethnic food into on-campus dining services		
Strongly Disagree	10	3.7
Disagree	19	7.1
Neither Agree Nor Disagree	54	20.1
Agree	98	36.4
Strongly Agree	88	32.7
The inclusion of ethnic food options into on-campus food dining services would have a positive impact on educational experiences		
Strongly Disagree	12	4.5
Disagree	22	8.2
Neither Agree Nor Disagree	63	23.4
Agree	100	37.2
Strongly Agree	72	26.8

perceptions about the availability of ethnic food restaurants. Based on the data gathered from the focus groups, participants' perceptions regarding the availability and quality of ethnic food restaurants and retailers were lower. This is because most participants mentioned that they usually leave towns in order to either dine at ethnic food restaurants or purchase ethnic ingredients for personal cooking. This finding could be justified by the fact that six universities have participated in this study, so it might be in some towns surrounding participated campuses ethnic food provisions were more available than the area where the focus groups were conducted. This could explain the lower average level of perceptions in regards to the availability of ethnic food restaurants and ethnic food retailers. Clearly, the business community around some university campuses is not fully aware of international students as a target market.

The majority of respondents prefer to cook at home, this result could be an indication of a lack of ethnic food restaurants. Or it might be the service and diversity available in these restaurants that is not adequate, leading international students to cook at home. This could also be attributed to the data showing that the majority of respondents are graduate students who are not required to live on campus and participate in meal plans. The focus group work revealed two pertinent issues regarding dining habits: some international student's limited budgets, and, the tastes of ethnic food ingredients are not the same as those which can be found in their home country. Therefore, when international students cook at home they save money and at the same time try to assimilate a taste that is closer to home than that is offered by restaurants. In terms of whom they eat with, most of participants mentioned that they usually eat out with friends. This finding is consistent with other previous research. For example, Counihan and Van Esterk (1997) argue that eating and sociability are intertwined, and this was a student experience. To some extent, this result is consistent with the findings of National Restaurant Association (2000), which indicated that Chinese restaurants represent "basic family appeal" and attracts almost all consumers (Mills, 2000). Also, this finding supports the focus group findings which indicated that ethnic food represents many aspects of the participants' lives beyond hunger satisfaction only. It represents a form of social gathering, socializing, and enjoying the company of friends. Despite the busy time of most of students, the majority of them indicated that they eat out once a week and 2 to 3 times a week. This means that ethnic food is important and it plays a basic role in their lives, which explains why international students give it priority in their schedules.

With regard to miles, participants usually travel monthly to dine at ethnic food restaurants and to purchase ethnic food ingredients which are used for personal home cooking. Participants who travel 5 miles or less were the majority, followed by those who travel for more than 25 miles. Obviously, in some universities, ethnic food restaurants and retailers are available, while for some areas they are not. This means that some areas surrounding college towns are missing this kind of services, it would be worthy for business practitioners and university administrators to think of how to serve international students target by fulfilling their ethnic food needs. Comparing this result to the findings of the focus groups, some participants mentioned that they often leave their town to meet their ethnic dining needs by eating at ethnic food restaurants or purchasing ethnic food ingredients. In relation to the amount of money participants spend in a month on ethnic food, the majority of respondents spend between \$51.00 - \$100.00, followed by those who spend between \$50.00 or less. This means that despite the limited budgets of some international students, they still spend a portion of their income to fulfill their ethnic dining needs. A possible explanation

for this lies in the expense of some kinds of ethnic foods. Some participants in the focus groups stated they save a certain amount of money every month to dine at ethnic food and purchase ethnic food ingredients. Their only problem was with the relatively high prices of both dining and purchasing ethnic ingredients.

CONCLUSION AND APPLICATION

The relevance of this study is rooted in the topic it has investigated. Although some studies have concentrated on other aspects of international students, research that considers the importance of ethnic food [as a relevant variable in the overall experience of the international students] does not exist. Implications of findings of this study can be derived from university administrators and from ethnic food operators/owners.

The findings obtained in the present study provide evidence that there is a lack of attention concerning ethnic food dining needs in American educational institutions. This should incline university administrators to be aware of this issue and subsequently, solve it. Only (33.1%) of the participating universities in the present study provide on-campus ethnic dining services and (66.9%) do not. Therefore, university administrators must take more action to include ethnic dining services into their current on-campus options. According to Namvar (2000), accurate and timely information with regard to what is likely to happen to the economy and society has always been an important issue for business decision makers. Given that the enrollment of international students is increasing, knowing how to satisfy the needs of these unique students will be of value to university administrators especially within the intensive competition environment of attracting and retention more international students.

Universities who provide on-campus ethnic options are experiencing a better reputation among international students over those universities who do not. But to improve ethnic options, those universities should concentrate on issues that have more attachment to ethnic food. Those aspects of ethnic food are the most important, which means that improving current services is necessary to satisfy international ethnic food requirements. Also, pursuant to the results, faith should not be considered when improving services because it comparatively has a low attachment to ethnic food. But it might be worth considering when it comes to those ethnicities whose religion impacts their consumption, such as Muslims and Jews, where there are sets of restrictions and specific ways of processing food.

To better understand the specifics of various ethnicities, universities could discuss with various groups of international students their needs and preferences regarding their ethnic food. Those universities should learn from past trends and apply the information obtained to their present and future schemes when it comes to market the university. As the number of international students increase in most of the U.S. university and college campuses, these institutions will need to always be looking for feedback from their target customers, because it helps them provide products and services that these students want. By identifying who their customers are and what they want, universities will have an easier time bringing them in, providing them with value, and bringing them back. With regard to marketing and recruiting efforts, universities are competing to attract international students due to the benefits they bring. In doing so, universities use different marketing and recruiting tactics such as: employing on-campus ethnic dining to better recruitment efforts.

Learning from and benchmarking with universities in the U.S. with proven ethnic food operations on campus can be a step in the right direction. Universities who do not serve ethnic food into on-campus

food court should pay attention and take note of their counterparts who provide these options.

This study sheds light on the somewhat lack of the ethnic food provision in terms of ethnic food restaurant and retailers that sell ethnic food ingredients for personal cooking in some of the areas surrounding universities. Although ethnic food positively affects universities who offer this service, business operators interested in this area could be positively affected as well. From the perspective of ethnic food restaurant owners/operators, especially in the areas surrounding campuses, identifying the wants and needs of international students is a vital issue to help businesses succeed. According to the results revealed in this study, businesses need to focus on the cultural aspects of ethnic food items, rather than religious ones. They also should diversify their menus to include different food ethnicities in order to encompass all international student backgrounds. For meeting international students' needs, ethnic restaurant's personality and style should be defined by the ethnic food theme and should be mostly appealing to the needs of international students. As the number of international students continues to increase the need for more ethnic food restaurants and retailers will increase as well. Ethnic food retailers also need to consider the way they conduct their business. They need to diversify the ingredients as much as possible, and the taste of ingredients should assemble the taste found in the origin of that ethnic food as much as possible.

Although this research has been carefully prepared, there are some unavoidable limitations. According to the Open Doors report 2014, Asia is the highest place of origin for international students who come to the U.S; the number of students from Asia in the U.S increased by 8.1% in 2013-2014 to 568,510 students. This could potentially affect the results of this study because if there is a greater percentage of availability in Asian dining options, Asian students may report better perceptions of ethnic food dining options than students of other ethnicities. Therefore, the dominance of Asian students may skew the results. Another limitation is that only six universities actually participated in this study. Therefore, caution should be exercised when generalizing the results of this study beyond its scope. Based on the lack of previous research addressing the issue of ethnic food and university students, this study is considered to be exploratory in nature, thus limiting the application of the results to other populations outside of the one investigated here. Another limitation of the current study which should be addressed in future research is the sample itself. No details about ways to segment the sample population were provided in the current study, but instead the sample was treated as a singly homogenous population. Differences in the age, marital status and even the gender of the respondents may have an effect on the behaviors of international students, especially in regards to their cooking and eating out habits. In addition, because there is a paucity of published work within this area and based on the focus group sessions, it was decided by the researchers to let the respondents themselves perceive the availability of ethnic food restaurants and retailers through the natural course of the study. Also, using only one question to measure self-reported personal health is not reliable. Therefore, more measurements should be added in future research. Lastly, future research should examine the relationship, if there is any, between the length of staying in the U.S. and international students' perceptions of ethnic food.

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