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Research Article

Determination of Neophobia Levels of Students Studying in Gastronomy Departments of Higher Education Institutions in Northern Cyprus

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Abstract: The food and beverage industry ranks among the sectors that are constantly open to innovation. Food neophobia refers to individuals' reluctance to consume foods they are not accustomed to or have not tried before. In the process of forming and maintaining eating habits, individuals may tend to prefer certain foods and not be open to new foods. We conducted our research on the students of the Culinary Arts Department at the American University of Cyprus and the Girne American University to look into this subject more in-depth. This study was conducted using the Food Neophobia Scale (FNS) to understand students' fear of novelty in their food preferences. The data obtained from 182 students through face-to-face interviews and a supplemented questionnaire were evaluated and analyzed using statistical methods. The results of the study revealed that students generally showed an aversion to new foods. This reluctance has often caused individuals to avoid trying foods that are different from what they are used to. It is therefore seen as a critical step in understanding future trends in the food sector. The results of such research can be used to understand the younger generation's approach to new foods, the industry's product development strategies, consumer demands, educational institutions to update their curricula, and students to introduce innovative food products. Since there is no study on food neophobia between university students in Northern Cyprus, this research will shed light on future studies.

***Keywords*:** food neophobia, food habit, food preferences, gastronomy, Northern Cyprus

1. Introduction

The presentation and consumption of food, which has become an important part of the gastronomy experience today, has an important place in the development of gastronomy and destination attractiveness. A person's dietary selections are influenced by a multitude of elements, encompassing the inherent characteristics of food items, feelings of hunger and fullness, individual characteristics, eating habits, and the availability and accessibility of food [1]. Research indicates that cognitive and motivational aspects additionally play a role in shaping an individual's receptiveness or reluctance towards particular food choices [2]. In this context, food neophobia is referred to as a personal unwillingness to accept or enjoy new or unfamiliar foods and beverages [3]. Discovering a new food is an experience in which people often hesitate to venture beyond the flavors they are accustomed to. While there may be a tendency towards familiar foods that provide comfort in food choices, it can also bring about reluctance towards trying new flavors [4]. According to Fallon and Rozin [5], three fundamental motivational dimensions have been identified, providing a useful framework

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for understanding people's acceptance and rejection of food. These are expressed as (1) responses based on anticipated outcomes of foods, (2) sensory-emotional responses to foods, and (3) cognitive responses to foods. Individuals begin to establish a cycle in their food and beverage habits by adhering to a regular dietary regimen, highlighting the necessity to examine the phenomenon of food neophobia in foods, which has a significant impact on the field of gastronomy [6].

Moreover, eating behavior is influenced by a lot of factors, including psychological, economic, cultural, and household-related factors, which combat, strengthen, and engage with each other, shaping according to the individual circumstances of the family [7]. Notably, many investigations into the origins of neophobia underscore the psychological context of this conduct [8]. Additionally, the psychological tendency towards trying new foods or being hesitant towards them can play a regulatory role in explaining how consumers evaluate their food consumption experiences, attitudinal, and behavioral psychological outcomes [9-10]. In an era where consumer demands constantly change, the food and beverage industry must adapt to innovations. An important element in ensuring sustainable growth amid this change is the innovations made by kitchen staff. The reluctance of aspiring culinary professionals to try new foods can lead to disadvantages in their careers [11]. Therefore, the importance of food neophobia is increasing, and its relationship with various fields of knowledge is becoming increasingly apparent. Various studies in this regard have formed a broad literature based on methodological analyses. We have conducted research for a variety of purposes, ranging from the effects of diet diversity on health [12-13] to research focusing on new product development processes [14-15], sensory analyses [16-17], and investigations into socio-economic factors [18-19].

It is observed that food neophobia is often used as a tool to analyze or support other objectives [20-21]. However, there is still much unknown about the origins of food neophobia, its actual effects on health, and its relationship with individuals' socio-economic characteristics in this field. The aim of this study is to measure the fear of novelty in food (FNS-Food Neophobia Scale) among students enrolled in the Gastronomy Department of Higher Education Institutions in Northern Cyprus, determine their approaches towards new foods, and develop various recommendations accordingly. Due to the absence of studies on food neophobia among university students in Northern Cyprus, this study will shed light on future research in this area.

2. Literature review

Within the framework of previous literature, food neophobia is a phenomenon that affects people in different aspects, especially food choice, can be seen in every period of life and may arise due to different factors. Neophobia, which is not considered only as a disease, can also be considered as a personality trait or condition. Food neophobia is seen at different levels depending on individuals, and it is possible to develop measures when considered interdisciplinary. In this respect, it is thought that it is an issue that needs to be addressed in every aspect, both practically and theoretically, and related studies need to be developed.

The development of eating behaviors is a complex process influenced by the dynamic interplay of genetics, environmental factors, and food-related experiences that modulate genetic predispositions throughout an individual's life [22]. This primarily reflects the degree of reluctance to consume foods that are new and especially those coming from other food cultures [23]. It is thought to be mediated by the fear that unknown foods may taste bad [24]. In the study carried out by Olabi et al. [25], the researchers compared the level of food neophobia between American and Lebanese university students. They also evaluated the effect of personal variables such as country of residence and socio-economic status on food neophobia levels. In a study by Siegrist et al. [26], in the German and French-speaking regions of Switzerland, it was observed that socio-demographic variables had a greater impact on food neophobia among older participants compared to younger individuals. Additionally, male participants exhibited higher levels of food neophobia compared to females. Birdir et al. [27] conducted a study to measure food neophobia levels and attitudes towards food among students studying at the Faculty of Tourism. The study concluded that students majoring in Tourism Guidance and Tourism Management exhibited high levels of food neophobia.

Whether food neophobia constitutes a genuine fear is indeed an important question, and relevant literature provides evidence to support this notion [28]. For instance, food neophobia has been linked to physiological responses indicative of fear towards new foods [29]. Furthermore, food neophobia varies among individuals and can be addressed through interdisciplinary measures. Therefore, it is believed to be an issue requiring attention from both practical and theoretical perspectives, necessitating the development of related studies.

When examining the factors affecting food neophobia, willingness to try new foods, fear of trying new foods, and liking foods from different cultures each play a critical role in shaping individuals' attitudes and behaviors towards new foods. Willingness to try new foods is one of the key determinants of food neophobia. Research has shown that individuals with a high willingness to experience new foods generally exhibit less food neophobia. Recent studies have investigated how personality traits such as curiosity and openness affect this willingness.

Seymour and Jones [30] demonstrated that curiosity and open-mindedness play significant roles in food preferences and lead to a more positive attitude towards trying new foods. The study highlights the connection between openness to new experiences and curiosity. Van der Horst and Kremers [31] also revealed that factors influencing the willingness to try new foods in children and adolescents include family dynamics and social interactions. Fear of trying new foods is directly related to food neophobia. This fear can stem from past negative experiences or sensory sensitivities. Recent research has explored how this fear can hinder food acceptance.

In their study, Lee and Kim [32] analyzed how fears related to new foods are associated with anxiety and stress, and how these factors play a role in food neophobia. The research emphasizes the impact of sensory sensitivities and fears on food acceptance. Smith and Wilson [33] examined the psychological and emotional origins of the fear of trying new foods and provided strategies for overcoming these fears. Liking foods from different cultures can be an important factor in reducing food neophobia. Exposure to various cuisines can generally help develop a more open attitude towards trying new foods. Cultural experiences and positive exposure can reduce neophobic tendencies.

Rodriguez and Fernandez [34] explored the effects of exposure to diverse cultural foods on reducing food neophobia and demonstrated how cultural diversity can influence food preferences. Nakamura and Wang [35] showed that exposure to international cuisines and cultural preferences can increase individuals' openness to trying new foods.

Understanding the factors affecting food neophobia-willingness to try new foods, fear of trying new foods, and liking foods from different cultures-provides valuable insights into addressing and potentially reducing this neophobia. Creating a more open and culturally diverse food environment can encourage individuals to overcome their neophobic tendencies.

3. Methodology

3.1 *Participants*

The population of this study consists of students enrolled in the Gastronomy Department of the American University of Cyprus and Girne American University. The students participating in the research filled out the questions in the survey form consciously and the questions were understood and answered correctly. The sample of this research conducted on gastronomy department students provides the necessary adequacy to achieve all the study objectives.

3.2 *Data collection tools*

Quantitative research method was employed in this study. As a data collection tool, a survey was administered through face-to-face interviews and online delivery of the link created through Google Forms. The survey form prepared within this scale consists of 2 sections and 15 statements. The first section of the survey includes participants' demographic characteristics, while the second section utilizes the "Food Neophobia Scale" developed by Pliner and Hobden [36] to determine food neophobia. The research data was collected between February and March 2024. A total of 200 survey forms were distributed, and 182 of these surveys were subjected to analysis. Eighteen of these surveys were not included in the analysis due to missing or incorrect responses.

The demographic characteristics of the participants and the testing of factor analysis for the research scale have been explained.

Table 1. Distribution of participants according to demographic characteristics

Variables	Frequency (N)	Percentage Value (%)
Gender		
Female	83	45.6
Male	99	54.4
Age		
17-19	32	17.6
20-22	69	37.9
23 years and above	81	44.5
Class		
1. Class	74	40.7
2. Class	48	26.4
3. Class	18	9.9
4. Class	42	23.1
Internship Status		
Yes	87	47.8
No	95	52.2
Abroad status		
Yes	102	56.0
No	80	44.0
Total	182	100.0

The demographic characteristics of the participants in the study are presented in Table 1. According to this, it was determined that 45.6% of the participants were female, while 54.4% were male. It was found that 17.6% of the participants were in the age range of 17-19, 37.9% were in the age range of 20-22, and 44.5% were 23 years old and above. Furthermore, 40.7% of the participants were freshmen, 26.4% were sophomores, 9.9% were juniors, and 23.1% were seniors. Also, it was determined that 47.8% of the participants had an internship, while 52.2% did not do an internship and 56.0% of the participants were abroad and 44.0% were not abroad.

3.3 *Data analysis*

The Food Neophobia Scale was evaluated with a 10-item 5-point Likert scale. The options are as follows: “Strongly Agree” is 5 points, “Agree” is 4 points, “Neither agree nor disagree” is 3 points, “Disagree” is 2 points and “Strongly Disagree” is 1 point. The data were analyzed and interpreted using Statistical Package Program 23.0. It is crucial to

specify the statistical package program used to ensure clarity and reproducibility of the results. Statistical Package for the Social Sciences (SPSS), developed by International Business Machines (IBM), is widely used in social sciences for its robust data handling and analytical capabilities. It provides tools for managing data, performing complex analyses, and generating comprehensive reports, making it a preferred choice for researchers in sociology, psychology, and other related fields. This level of detail allows other researchers to replicate the study accurately, enhancing the reliability and validity of the findings. Exploratory factor analysis was performed to determine the factor structure of the scale. Varimax rotation option and principal component analysis were applied to determine whether forward and reverse-scored items loaded onto different factors. The Cronbach's Alpha test was utilized to assess the reliability of the scale, while frequency and percentage analysis were employed for interpreting demographic variables. Approval was received from the Scientific Research and Publication Ethics Committee of the American University of Cyprus with the reference number AUC/EK06/2024. Ethical principles were followed during the collection, analysis, and storage of data.

4. Results

4.1 *Factor analysis for the research scale*

Table 2. Explanatory factor analysis of fear of innovation in food

Materials	Average	Factor 1	Factor 2	Factor 3
I am always trying new and different foods (R)	3.797	0.852		
I don't trust new foods	3.912	0.843		
I like food from different cultures (R)	3.385	0.737		
If I don't know what is in a food, I won't try it	3.654	0.722		
I like to go to restaurants that serve food from different cultures (R)	3.698	-0.478		
I don't eat foreign food because it looks strange to me	4.049		0.745	
I try new foods at social events (R)	3.566		0.725	
I'm afraid of eating food I've never tried before	4.099		0.632	
I don't choose food, I eat everything (R)	3.907			0.830
I am very picky about the food I eat	3.841			-0.756
Factor Average		2.731	2.182	1.468
Eigenvalue		3.928	1.441	1.013
Percentage of Variance Explained %		30.637	18.708	17.160
Percentage of Total Explained Variance %			66.505	
Cronbach Alpha		0.807	0.815	0.805

KMO: 0.753; Bartlett Test of Sphericity: 733.662; $p < 0.000$.

The factor structure of the scale was determined using exploratory factor analysis. The Kaiser-Meyer-Olkin (KMO) value of 0.753 and the significant result of the Bartlett's Test of Sphericity (Sig. = 0.00) indicate that the factor analysis of the sample is quite adequate [37-39]. The Food Neophobia Scale includes 5 reverse-coded items. Factor analysis was performed after correcting the reverse-coded statements. Varimax rotation option and principal component analysis were performed to determine whether forward and reverse-scored items loaded onto different factors. The results indicate that the scale loaded onto three factors. The first factor represents willingness to try new foods (reverse-coded), while the second factor encompasses fear of trying new foods. The third factor encompasses questions related to liking foods from different cultures (reverse-coded). The research has demonstrated that using factor analysis accurately reflects the different dimensions of food neophobia. The percentage of explained variance was found to be 30.637% for Factor 1, 18.708% for Factor 2, and 17.160% for Factor 3. The total explained variance percentage was calculated as 66.505%.

These results confirm that the scale adequately represents the intended different dimensions [40-41]. In Table 2, reliability values, eigenvalues, factor loadings, and variance explained ratios of the factors are presented. The Cronbach's Alpha value of the scale was calculated as 0.826. This value supports the reliability of the scale [39].

When the results of the frequency analysis for food neophobia-related statements were examined, it was determined that the statement "I am afraid to eat food I have never tried before." with a mean of 4.099 and the statement "I do not eat foreign foods because they look strange to me." with a mean of 4.049 showed the highest levels of agreement. It was found that the statement "I like foods from different cultures," which is inversely related to the level of food neophobia, had the lowest level of agreement (3.385). The results indicate that students enrolled in the Culinary Arts Department programs at American University of Cyprus and Girne American University exhibit a low willingness to try new foods.

5. Discussion and conclusion

The food industry is a constantly evolving field. To keep up with this dynamic nature, individuals working in the food sector need to continuously update themselves. This process of updating is made possible through education and the development of professional skills. Being willing to try new food production methods and explore different culinary cultures can positively impact professional success.

The population of this study consists of students enrolled in the Gastronomy Department of the American University of Cyprus and Girne American University. The aim was to understand the fear of novelty in food preferences among these students using the Food Neophobia Scale. The data obtained from face-to-face interviews and the supported survey administered to 182 students were evaluated and analyzed using statistical methods.

While demographic characteristics (age, gender, income level, education) are included in the research, personality traits, which are another factor affecting food preference, are excluded from the study. Situational factors regarding new and different foods were not examined. Situational factors could influence individuals' food preferences, but this is outside the scope of the study. Another limitation is that all participants were young, which may be the reason for the lack of age difference. The age factor can be revealed more clearly with another study evaluating young people and adults. In this regard, conducting similar studies in different age groups in various regions of our country can contribute to researchers in the field and food production enterprises.

Based on the analysis results, the Food Neophobia Scale, which consists of 10 statements, showed the highest agreement with the statement "I don't eat foreign foods because they look strange to me" at 42.9%, which is proportional to the level of food neophobia. Following this, the second most agreed statement was "I am very picky about the foods I eat" at 38.7%, and the third most agreed statement was "I am afraid to eat food I have never tried before" at 22.3%. The research findings revealed that students generally showed reluctance towards trying new foods. This reluctance has often led individuals to avoid trying foods that are different from what they are accustomed to.

The results of the difference analysis indicate that the fear of trying new foods does not differ by gender. This finding aligns with the results of Hursti and Sjöden [42], Olabi et al. [25], Alphan [43], Kaplan [44], Birdir et al. [45], Ceylan and Şahingöz [46], and Yiğit [47]. Another result reached in the study is that the fear of trying new foods does not vary by age or grade level. These findings are similar to the results of studies by Alphan [43], Ceylan and Şahingöz [46], and Çakır Keleş [48]. No differences were detected due to students being of similar ages and the presence of individuals from all age groups in the same grade levels. Considering these factors, we can hypothesize that the high food neophobia observed among gastronomy students studying in different countries may be a complex interaction of

initial anxiety due to intense exposure, cultural influences, stress, and methodological concerns.

According to Rabadan and Bernabeu [3], it has been concluded that food neophobia is at least partially genetically determined. Regarding the influence of psychological and socio-economic factors on food neophobia, there is a general trend of decrease in food neophobia levels over time across countries, emphasizing that as education, income, and urbanization increase, food neophobia tends to decrease. According to Dönmez and Sevim [49], it has been observed that students in the culinary arts program at Kastamonu University generally harbor this fear, and they tend to have a fear of trying new foods. Additionally, according to Yiğit and Doğdubay [11], it has been found that students in the gastronomy department at Balıkesir University are reluctant to try new and culturally diverse foods. While preferring familiar foods may provide ease in terms of nutrition, over time, this eating pattern becomes a cycle, aligning with the results obtained. According to Flight and Cox [50], a study carried out among young people in Australia revealed different tendencies in trying new foods between rural and urban youth. The results indicate that young people living in rural areas are less willing to try new foods compared to their urban counterparts. While food neophobia is a natural stage of development, its emergence can also influence the perpetuation of inappropriate behaviors [8]. Therefore, if neophobic behavior persists or intensifies, appropriate intervention should be implemented. Food neophobia is influenced by various factors; therefore, like in eating disorders, it should be addressed by a team of specialists including a pediatrician/gastroenterologist, clinical dietitian, neurologist, psychologist, sensory integration therapist, nutrition therapist, and others [51-54]. In addition, Students completing their internships early in the Gastronomy Department is highly important for them to enhance their culinary skills and experience various culinary cultures. This practice provides students with a broader perspective and helps them gain practical knowledge and experience related to their profession. Also, When university students have the opportunity to study abroad through exchange programs, they will have the chance to develop themselves by experiencing the cuisine of different cultures firsthand. These programs will not only provide students with an enriching experience academically but also culturally and gastronomically.

In conclusion, this research is seen as a critical step in understanding future trends in the food sector. Food neophobia is defined as the tendency of individuals to avoid trying new foods and is usually based on a psychological basis. It shows that individuals' emotional states and psychological characteristics can affect their willingness to try new foods. Understanding the young generation's approach to new foods can shape product development strategies in the industry and better respond to consumer demands. Additionally, the results of such research can be utilized to update the curricula of educational institutions and introduce innovative food products to students. However, continuous support and collaboration are necessary for these efforts to be sustainable and embraced by society at large. The findings of the research contribute significantly to understanding food habits and preferences and to developing measurements for future studies.

In conclusion, this research is seen as a critical step in understanding future trends in the food industry. Food neophobia is defined as the tendency of individuals to avoid trying new foods and is usually based on psychological grounds. It shows that individuals' emotional states and psychological traits can affect their willingness to try new foods. Understanding the young generation's approach to new foods can shape product development strategies in the industry and better respond to consumer demands. This study sheds light on both educators and industry representatives by comparing the levels of fear of trying new foods among students studying in food-related departments, who are considered the backbone of the profession or industry. Students in food-related departments (especially culinary arts) who have a fear of trying new foods may face obstacles in their professional lives. Additionally, by doing early internships, students can increase their professional experience and reduce their fear of trying new foods. It is recommended that businesses also be willing to teach intern students and continuously monitor their experienced staff in this regard. However, continued support and collaboration are required for these efforts to be sustainable and embraced by society. The findings of the study contribute significantly to understanding food habits and preferences and to developing measurements for future studies.

Conflict of interest

The author declares no competing financial interest.

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