

Eating with your eyes first: Assessing the influence of the artistic visual presentation of food on  
the dining experience

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### Abstract

An experiment on assessing the influence of the artistic visual presentation of food on the dining experiment was conducted between 40 students to find out if there actually is any influence of visual presentation of food on likeness and tastiness of the food. Two groups were a part of this experiment; a group which was served traditionally looking banana roll cake and a group which was served modernly decorated banana roll cake. The participants were given two questionnaires in order to measure the influence of artistic arrangement of cake on the perception of flavor, one prior to eating the banana roll and the second after eating. Prior to consumption, the artistically decorated banana roll was considered as more complex and artistically arranged and participants were willing to pay more for it, while traditionally decorated banana roll was found to be healthier. Results found in the recreated experiment support the idea that visual presentation of food influences perception of flavor.

Keyword: Food, art, perception, experience, visual hunger.

## Introduction

From the early centuries, people have depended on food and it was considered a foundation for entire civilization (Standage,2009).In the 1980's a point where expansion of empirical and theoretical pieces of work of food came from different social and cultural discipline, those were the years in which public interest in food rose (Becut & Puerto, 2017). Focus on food and food production has put local, regional and national cuisines as a representation of nations.

The First form of restaurants as we know them today appeared in Paris, France in 1765, before these restaurants in Paris, coffeehouses existed in England and they had the same purpose (Ninemeier, 1995). Food service was only available in inns and by catering operations, before 1765. Later on, chain restaurants, drive-ins, and fast food restaurants were created. As restaurants became more common, restaurant owners concluded that every successful restaurant is aware that the dishes they offer have to vary according to the region they are in (Angelo & Vladimir, 1994). People of different regions want different tastes of food, even within the same country, their preferences are not the same. In northern China, people prefer spicier food than in the south of China. One of the most famous restaurant chains in the US and outside called "Olive Garden" decided to adapt their menu for each restaurant in different locations that is why they currently offer 110 different menus for over 400 restaurant locations. Even global fast food chains like McDonald's adapt their menus to the county in which the restaurant is in. In Tokyo, they serve rice balls and miso soup, while in other places around the globe you won't be able to find these items on the menu.

With an increase in restaurants popularity and customers from other countries who started arriving in their restaurants, the owners started realizing the importance of knowing other

countries gastronomy (Žuvela, 2009). French, Italian, Spanish, Portuguese, Austrian, Russian, Hungarian and Japanese cuisines are mentioned just as some of the most important cuisines in the world. French cuisine could also be seen as an inspiration to all other cuisines because gastronomy in French cuisine is considered an art. Italian cuisine was completely inspired by French cuisines and Italian inspired other world cuisines.

### *New trends*

When we look at the 21st century much has changed when it comes to food trends. We still use the same ingredients we used since the beginning of time, but in a different way. Some of the most popular trends lately were: organic food, molecular gastronomy and nouvelle cuisine (Key, 2013, Cousins, O’Gorman, & Stierand, 2009).

Organic food was not a new concept in the 21st century; it was an idea from the past centuries that was reintroduced (Key, 2013). In 2004 a high increase in organic food market was noted. In between 2005 -2014 there was an increase of 110% of organic products consumption in the EU alone (Meridith, & Willer, 2016). Organic food can be defined as all food grown without any pesticides and fertilizers. Organic products from animals came only from animals which are fed by 100% organic feed. Organic food was (and still is in some parts of the world) a trend because it promotes a healthy lifestyle and gives benefit to the whole earth instead of just one person.

Another trend that followed organic food trend was molecular gastronomy and it can be explained as understanding and improving culinary processes (Cousins, O’Gorman,&Stierand, 2009). It is based on using and applying scientific techniques in order to improve culinary processes. Molecular gastronomy mostly focuses on how do food ingredients transform when

they are cooked in a certain way. This style of cooking also puts an emphasis on artistic food presentation.

One of the most famous dishes from molecular gastronomy is olive oil lollipops that are served in Alinea restaurant in Chicago. This dish belongs to molecular gastronomy because olive oil is usually not frozen and used as a main dish. Olive oil is frozen using a “cold” plate that freezes food in between -30 to -40 °C. The so-called “cold plate” is not something that is usually found in restaurants and it is usually used in re-creating scientific experiments (Levy, 2012).

Molecular gastronomy served as an ideal inspiration for the development of another trend known as Nouvelle cuisine. Nouvelle cuisine is also known as “new” cuisine and it originated from France and it was very popular in late 1960’s and early 1970’s. Even though Nouvelle cuisine looked up to molecular gastronomy for inspiration, this style of cooking avoids preparing heavy foods, unlike molecular gastronomy where preparing heavy food has its importance. Nouvelle cuisine puts focus on preparing dishes focused on freshness and simplicity of ingredients, and it encourages innovations in food design and preparation similar to molecular gastronomy (Cousins, O’Gorman,& Stierand, 2009). Nouvelle cuisine can also be looked at a type of a fusion cuisine because it concentrates on combining different cuisines together. Combining different ethnic cuisines and ingredients from different parts of the world is what nouvelle cuisine is all about. This particular trend showed food as art, but when it first appeared it was not warmly welcomed by many because of the simplicity and taste that was often ignored.

### *Food design*

The Food industry is one of the most innovative industries and one of the industries that changes a lot (Davis, Lockwood, & Stone, 1998). This industry changes in order to accommodate changing tastes and to follow other retail industry trends. Food service industry

operation puts an accent on “meal experience” which consists of tangible and intangible events which create an experience for a guest.

As society became more sophisticated it became more apparent that the food is becoming chosen not only to satisfy hunger but also to satisfy other senses (Morgan, 1981). Food color, texture, and odor play an important factor in choosing and accepting food. Other elements like décor and lightning can also influence the perception of food.

Putting a high importance on food design created a concept “visual hunger” which describes the fact that we usually eat with our eyes first (Spence, Okajima, Cheok, Petit, & Michel, 2016). “Visual hunger” explains that a way in which food is visually presented has an influence on how the flavor of the food is perceived. The Research was done where participants were shown pictures of high and low-calorie food and brain response from the participants was measured when they were shown food photos. The group of participants who were shown high-calorie food photos had greater brain activation and the photo was pleasuring to them, while participants who were shown a low-calorie food photo found it to be less pleasuring.

Making a plate visually pleasing to a guest is hard work, it is even the smallest details like the placement of butter on a steak can increase overall guest satisfaction (Morgan, 1981). It can also be concluded that the combination of colors on the plate, lack of vegetables, lack of food design or even color combinations are the factors that contribute to visually pleasing the guest. It is a fact that food presentation like the flaming entrée increase restaurant sales and overall dining experience.

A good dish presentation should be arranged in a simple, pleasing pattern without too many ingredients on the plate (Sawa, 2015). The presentation shouldn't either be too slick or fussy in order to be taken perceived as a visually pleasing dish.

Combination of colors on the plate and a shape of a plate are not the only things which customer notices (Szocs & Lefebvre, 2015). Some restaurant realized that food and plate presentation needs to be used a strategic tool that is why they further explored the importance of vertical and horizontal food presentation. Horizontal and vertical presentation of food is two most common ways of presenting food in the restaurants even though new ways of food presentation appeared. Food that is horizontally placed on the plate is perceived as larger by guests than the food presented vertically. Vertical food presentation will lead a guest to consume more food and it won't make them feel bad about themselves. Vertical presentation of food is perceived by the customer as there is a smaller amount of food on the plate, while the horizontal food presentation makes the dish seem larger.

There are also other things we need to consider when creating an experience for a customer pre-meal experience needs to be taken into consideration (Davis, Lockwood, & Stone, 1998). Pre-meal experience is what the guest already expects before entering a restaurant. This might be a decision about what kind of dish a will customer order and their overall expectations of a restaurant.

Previously mentioned trends build upon the concept of “visual hunger” because customers are more focused on food design, therefore, they make food tastier. Numbers of experiments were conducted to prove this theory and one of those experiments was: “A taste of Kandinsky: Assessing the influence of the artistic visual presentation of food on the dining experience” which found out that visual arrangement of food on the plate makes it more likeable and enjoyable (Michel, Velasco, Getti, & Spence, 2014).

In order to fulfill all factors previously mentioned, there are a few guidelines when it comes to serving food on a plate (Žuvela, 2011). The plate can never be completely covered with

food because that creates a bad image in customers mind and it is immediately perceived as less tasty than it really is. The plate should be decorated in a simple way because it perceives simplicity as more trustworthy. To ease plate decoration, lately bigger plates are being used which makes a meal more attractive to the customer. There are also a few guidelines for decorating the food itself. Every decoration needs to complement the meal, when decorating the food there are two different things that can be on the plate: decoration which is everything that can be found on the food itself and garniture which is everything that is placed beside the food and compliments the food. If the main dish is meat, then decorations could be olives, mushrooms, eggs and different types of vegetables, while garnitures would be stuffed vegetables and different combinations of dough's and vegetables (Figure 1).

### Methodology

An experiment based on the previously conducted study: "A taste of Kandinsky: assessing the influence of the artistic visual presentation of food on the dining experiment" was conducted as a part of the research for a senior project (Michel, Velasco, Getti, & Spence, 2014).

The recreated experiment tested following hypotheses:

*H1: Food presented in an artistic visual manner will be perceived as tastier.*

*H2: Guests will be willing to pay more for food presented in artistic visual manner.*

*H3: Food presented in an artistic visual manner will be perceived as a more likable dish.*

Experiment procedure was modified in order to fit into existing settings and participants. Original experiment contained 60 participants, while in the recreated experiment had 40 participants. Food presented in the original study was presented in three different visual arrangements; "regular" arrangement where ingredients were placed in the middle of the plate, "neat" presentation where ingredients were covered with sauce and placed next to each other but without touching each other and the third arrangement was "art inspired" where ingredient was

placed on a plate in a specific manner recreating Kandinsky's painting "Number 201". The recreated experiment consisted of only two visual arrangements: "modern" and "traditional". In the modern arrangement, a piece of banana cake roll was placed on the middle of the plate and covered in cream, cocoa, chocolate dressing and edible flowers, while in the "traditional" arrangement a piece of banana cake roll was placed on the plate without any additional arrangement except cream. The place where the original experiment was conducted was a laboratory, while a recreated experiment was conducted in a classroom at RIT Croatia – Dubrovnik campus. In the original experiment, the room was dark and isolated from daylight with curtains, where only light in the original experiment was a table lamp placed directly above the meal. The recreated experiment was not isolated from daylight nor was it in a dark room. Original experiment recreated a typical restaurant table with a white tablecloth, while recreated study used study desks as a setup for the experiment. There was no tablecloth in the recreated study and a typical restaurant table was not recreated. During the original experiment, participants were left alone in the laboratory while eating the food and completing questionnaires, while in the recreated experiment participants were monitored by the moderator throughout the experiment.

### *Participants*

Participants of this experiment were RIT Croatia – Dubrovnik students. Total of 40 participants took a part in this experiment ranging from 18 to 29 years of age. The Average age of participants was 21, 43 years old. There were more female (57,5%) than male (42,5%) participants of the experiment. During the experiment, they were divided into smaller groups of five participants because of easier monitoring of experiment (Figure 2).

When participants were asked how often they eat out the most common answers were several times a month (25%) and about once a week (25%), while the participants usually eat in fast food restaurants (37,5%) and in casual dining restaurants(37,5%) (Figure 3 and 4).

### *Apparatus and materials*

The cake used in the experiment was a banana roll cake made by a local bakery. The same set of ingredients was used for both groups of participants and it was presented in two different visual arrangements – one visual arrangement per group of participants. In the “traditional” presentation of the cake, the cake was served on a white plate and will be served in a traditional manner, meaning without any form of decoration of the cake or the plate except cream on top (Figure 5). In the “modern” presentation of cake, each piece of cake was modernly decorated and served on a white plate which included cream, cocoa, chocolate dressing and edible flowers (Figure 6). Both cakes were made from chocolate, banana, eggs, white flour, sugar and butter.

### *Procedure*

Three different aspects were tested through experiment: willingness to pay for the dish, liking of the dish and tastiness of the dish. Data received was analyzed through independent sample t-test analysis and correlation.

The setting of the experiment was a classroom at RIT, Dubrovnik campus which allowed participants to be seated in a manner where they were not close to one another, therefore, they couldn't influence one another. On the table, there was a fork and a paper napkin. The experiment lasted a total of seven minutes per group of five participants, in total, the experiment lasted 56 minutes. After the participants agreed to be a part of the experiment, they were seated in the classroom and the procedure was explained by the moderator. They were instructed that

they will be presented with a plate of cake and that they will be asked to eat it (Figure 7.) Before eating the cake, they were asked to complete a questionnaire concerning visual aspects of the cake. Finally, participants were informed that after completion of the first questionnaire, they were being allowed to eat as much as cake as they would like and that after eating they were given another questionnaire to complete (Figure 8).

None of the participants were aware of the existence of different visual presentations and no other information concerning the aim of the experiment or the food they would be eating or the preparation procedure given to the participants. When the cake was ready to be served, it was placed on the table in front of the participant.

The first questionnaire contained demographic questions, the question they answered before eating the cake which was focused on measuring participant's satisfaction with visual presentation. The second questionnaire contained questions which were focused on measuring if the attractiveness or lack of attractiveness changed after eating the cake. The first questionnaire contained two demographic questions, two socio-demographic questions and twelve questions that measured participant's hunger, the perception of the dish before and after eating and one question which tried to divide the participants into foodie or non-foodie group. Questions about food likeness before and after eating were measured by using a 10 point Likert scale and the question which tried to access participants hunger was measured using five-point Likert scale.

## Results

Three different aspects were tested through experiment: willingness to pay for the dish, liking of the dish and tastiness of the dish. Data received was analyzed through independent sample t-test analysis and correlation.

*Differences between the control group and the experiment group*

T-test analysis was used to measure differences between two groups of participants, the group who was served “traditional” looking banana roll and “modern” looking banana roll.

T-test results show that there was a significant difference detected between two groups in terms of attractiveness of food presentations,  $t(38)=3.49$ ,  $p=.001$ . The group that was served “modern” looking banana roll rated the food presentation as more attractive ( $M=7.26, SD=2.51$ ) than the group that was served “traditional” looking cake ( $M=4.24, SD=2.93$ ) (Figure 9).

T-test results also showed that there was a significant difference between two groups in terms of tastiness of the dish, the group that was served “modern” looking banana roll rated it as tastier even before eating ( $M=8.37, SD=2.17$ ) than the group who was served “traditional” looking banana roll ( $M=5.57, SD=2.50$ ) (Figure 10).

A significant difference was also found using t-test between two groups in terms of how artistically arranged they perceived their plates. The group that was served modern looking rated the plate as more artistically arranged ( $M=6.53, SD= 2.74$ ), than the group who was served traditional looking banana roll ( $M=3.24, SD=3.06$ ) (Figure 11). These results proved a hypothesis that states that food presented in the artistic visual manner will be perceived as a more likable dish. Even before eating, the group of participants which was served “modern” looking banana roll perceived it as more likable without even tasting it, this proves that food presented in an artistic manner is overall more likable. Independent samples test also showed the difference between two groups in the perception of the healthiness of the food,  $t(38)=3.15$ ,  $p=0.004$ . The group that was served traditional looking banana roll rated it to be more healthy than the group that was served modern looking banana roll,  $t(38)=3.26, p=0.002$ .

*Effect of being a foodie on the reported ratings*

T-test analysis found that participants who considered themselves to be “foodies” found banana roll to be more complex ( $M=5.50$ ,  $SD=2.92$ ) than the group of participants who were not foodies ( $M=4.68$ ,  $SD=2.32$ ). Results from t-test analysis also showed the participants who were foodies liked the food presentation more ( $M=6.67$ ,  $SD=2.99$ ) than the participants who were not foodies ( $M=4.86$ ,  $SD=3.03$ ). Foodies also found the plate to be artistically arranged more ( $M=5.89$ ,  $SD=3.38$ ) than the non-foodies ( $M=3.91$ ,  $SD=3.07$ ).

T-test results have shown that before eating, foodies found banana roll to be tastier ( $M=7.22$ ,  $SD=2.58$ ) than the non-foodies ( $M=6.64$ ,  $SD=2.85$ ) and healthier ( $M=5.73$ ,  $SD=2.87$ ) than the participants who were non-foodies ( $M=3.18$ ,  $SD=2.04$ ).

After eating, t-test results have shown that the participants who were foodies liked the dish more ( $M=8.0$ ,  $SD=1.94$ ) than the participants who were not foodies ( $M=7.82$ ,  $SD=1.89$ ). Nonfoodie participants found the banana roll to be tastier ( $M=8.09$ ,  $SD=1.85$ ) than the foodies ( $M=8.06$ ,  $SD=1.83$ ). Results from t-test have also shown that foodies felt fuller after eating the banana roll ( $M=7.50$ ,  $SD=2.23$ ) than the non-foodies ( $M=6.55$ ,  $SD=2.26$ ). The difference between ratings in tastiness of banana roll after eating was found in a comparison of foodies and non-foodies. Non-foodies rated the banana roll as tastier while foodies found it less tasty. Even though there was no significant difference in rating food tastiness it was still visible.

Non-foodie participants were willing to pay more for banana roll before eating ( $M=13.91$ ,  $SD=4.28$ ) than the participants who declared themselves as foodies ( $M=12.99$ ,  $SD=5.45$ ). While after eating participants who declared themselves as foodies were willing to pay more for the banana roll ( $M=15.88$ ,  $SD=7.86$ ) than the participants who were not foodies ( $M=14.64$ ,  $SD=3.95$ ). Overall, foodies were more interested in visual arts ( $M=6.44$ ,  $SD=2.81$ ) than the non-foodies ( $M=5.91$ ,  $SD=3.19$ ) (Figure 12).

### *Perception of food before and after eating*

Correlation analysis was used to measure the connection between questions, which contained 10-point Likert scale both before and after eating the banana roll.

Correlation analysis showed a significant connection between participants' level of hunger and their perception of dish complexity, tastiness of the dish before eating. The group of participants which rated themselves as very and extremely hungry rated the dish as more complex even before eating ( $r=.515$ ,  $p=0.001$ ), this group of participants liked the food presentation more ( $r=.552$ ,  $p=0.000$ ), they perceived the dish to be more artistically arranged ( $r=.527$ ,  $p=0.000$ ) and they also rated the dish as overall tastier even before eating ( $r=.326$ ,  $p=0.040$ ). The group of participants which was hungrier also rated the dish as healthier ( $r=.534$ ,  $p=0.000$ ).

Participants who found themselves to be hungrier than the rest, liked banana roll more after eating ( $r=.356$ ,  $p=0.024$ ) and they found it tastier ( $r=.346$ ,  $p=0.029$ ). Most of the participants who found themselves to be very or extremely hungry during the experiment were also interested in visual arts ( $r=.477$ ,  $p=0.002$ ) (Figure 13).

There was no significant connection found between participants who eat out more often and the way in which they perceived banana roll.

### Discussion

Art inspired food presentation and non-artistic manner and their perception were compared during the experiment. Even before participants had tasted the food “modern” looking cake was perceived as more liked and complex than the “traditional” looking cake. After eating, participants of the experiment rated “modern” looking food as more attractive and tastier. Participants of the experiment were willing to pay more for the “modern” looking cake both

before and after eating the cake. This shows that what people see influences their perception of the taste and that is why modernly decorated food would be more likable. A significant difference was found in the rating the healthiness of the cake. A group of participants that was served traditional looking cake rated it as healthier, while the group of participants that was served modern looking cake did not find it healthy at all.

The difference in rating of food tastiness between foodies and non-foodies occurred after eating the banana roll, where non-foodies rated banana roll to be tastier than the non-foodies. The participants who rated themselves as non-foodies were also willing to pay a higher price for the banana roll before eating than the foodie participants. In the original study “A taste of Kandinsky”, this was not the case.

Overall results show that the visual presentation of food is an important matter that influences tastiness and likeness of the food. Studying food presentation and how it is perceived should be further studied through psychology with a focus on sensory perception. Experiments prove that: “Color is forever a part of our food, a visual element to which human eyes, minds, emotions, and palates are sensitive. Perhaps through eons of time, man has come to build up strong and intuitive associations between what he sees and what he eats. A good meal, to say the least, is always a beautiful sight to behold” (Birren, 1963).

This experiment has shown that the previous findings were true and that people eat with their eyes first. Attractive color and overall presentation of the dish definitely influences the perception of food tastiness, complexity, quality and overall likeness.

#### *Limitations and future research*

Even though results of this experiment have partially confirmed hypotheses set before the experiment, there is a number of limitations in the present study that should be taken into

consideration. Banana roll might be a too simple dish to use for such an experiment and different foods and different plating should be used in future experiments.

It is important to mention that the experiment included only between students ranging from 18-29 years of and it was conducted in a college classroom which is not the usual place where food connected experiments are conducted and this might have influenced the results. Even though the experiment tried to replicate an already existing experiment, lack of possibilities might have influenced the conduct of the overall experiment. Moreover, the time of the day in which the experiment has taken place could have had an influence on hungriness of participants and their overall food perception.

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Figure captions

*Figure 1. Example of food serving*

*Figure 2. Participant's gender*

*Figure 3. Frequency of eating out*

*Figure 4. Frequency of restaurants for eating out*

*Figure 5. Traditional banana roll*

*Figure 6. Modern banana roll*

*Figure 7. Experiment protocol*

*Figure 8. Experiment questionnaire*

*Figure 9. T-test results comparing attractiveness of food presentation before eating*

*Figure 10. T-test results comparing tastiness of traditional and modern banana roll*

*Figure 11. T-test comparison between foodies and non-foodies*

*Figure 12. Comparison of foodies and non-foodies perception of banana roll*

*Figure 13. Comparison of participants who were hungry and tastiness of the food after eating*

Figure 1. Example of food serving

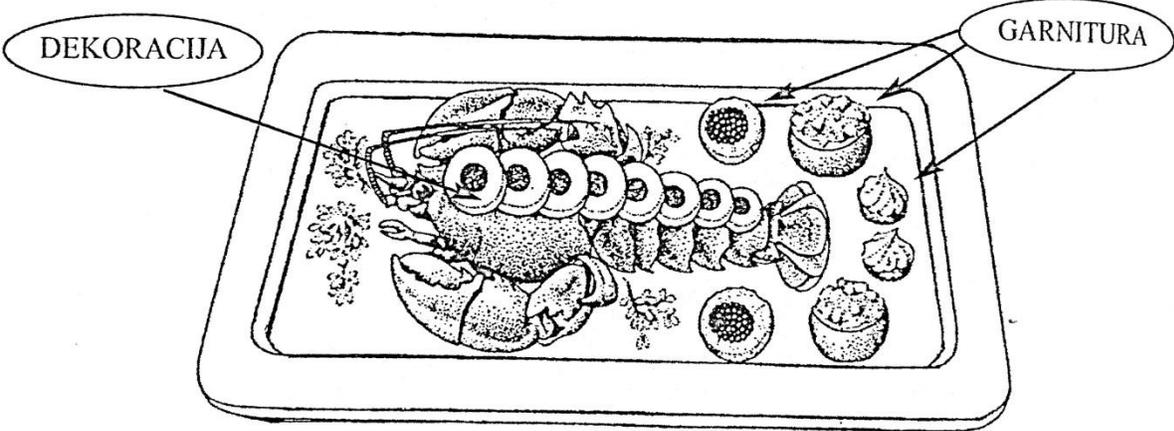


Figure 2. *Participant's gender*

**Gender**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	17	34,0	42,5	42,5
	female	23	46,0	57,5	100,0
	Total	40	80,0	100,0	
Missing	System	10	20,0		
Total		50	100,0		

Figure 3. *Frequency of eating out*

**How often do you eat out?**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	About once a year	1	2,0	2,5	2,5
	Several times a year	3	6,0	7,5	10,0
	About once a month	10	20,0	25,0	35,0
	Several times a month	6	12,0	15,0	50,0
	About once a week	10	20,0	25,0	75,0
	2-3 times a week	7	14,0	17,5	92,5
	more than 3 times a week	3	6,0	7,5	100,0
	Total	40	80,0	100,0	
Missing	System	10	20,0		
Total		50	100,0		

Figure 4. *Frequency of restaurants for eating out*

**Please specify what kind of restaurants do you visit usually?**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Fine dining	4	8,0	10,0	10,0

	Fast food restaurants	15	30,0	37,5	47,5
	Casual dining restaurants	15	30,0	37,5	85,0
	Family style restaurant	1	2,0	2,5	87,5
	Student cafeteria	5	10,0	12,5	100,0
	Total	40	80,0	100,0	
Missing	System	10	20,0		
Total		50	100,0		

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Figure 5. *Traditional banana roll*



Figure 6. *Modern banana roll*



Figure 7. *Experiment protocol*

## EXPERIMENT PROTOCOL

This experiment will be based on an existing experiment known as “A taste of Kandinsky”. There will be two groups of participants consisting of 10 participants each. The whole experiment will last up to maximum of 25 minutes (10 minutes per group and 5 minutes of break in between the groups to clean up the classroom).

Upon entering the room, participants will be guided by an experiment moderator – Adela Bijadija Custovic. Participants will be guided to their seating arrangement and will be given further instruction on the experiment.

Introduction (2 minutes)

**Moderator:** “Greetings everyone! My name is Adela and first of all I would like to thank you for participating in this experiment. Your contribution will be useful in recording the results needed for my senior project.

I would like to point out some guidelines that need to be followed during this experiment.

1. This experiment will last exactly 10 minutes.
2. In front you there is a plate with a piece of cake on it, on your left side you will notice a questionnaire you will need to fill out the first page of the questionnaire before eating. You will need to fill out the second page of the questionnaire after eating the cake.
3. Please take in consideration that no interaction of any kind is allowed between the experiment participants.
4. Usage of mobile phones is not permitted during the experiment.
5. After you fill out both parts of the questionnaire, please remain seated and wait for further instructions by the moderator.

6. After you leave the room you are not allowed to comment on the experiment with the next group of participants.

Lastly, I would like to thank you for the time spent on experiment. After finishing the experiment, my next step is to analyze the data. Thank you again!

### **Experiment with the first group ( 8 minutes)**

During the experiment, experiment moderator will be seated in the back of the room monitoring experiment protocol. The moderator will make sure that all participants are following the given guidelines and will monitor experiment protocol and time.

### **Brief break for cleaning up the classroom before the entrance of the second group**

Introduction (2 minutes)

**Moderator:** “Greetings everyone! My name is Adela and first of all I would like to thank you for participating in this experiment, and all your contribution will be useful in recording the results needed for my senior project.

I would like to point out some guidelines that need to be followed during this experiment.

1. This experiment will last exactly 10 minutes.
2. In front you there is a plate with a piece of cake on it, on your left side you will notice a questionnaire you will need to fill out the first page of the questionnaire before eating. You will need to fill out the second page of the questionnaire after eating the cake.
3. Please take in consideration that no interaction of any kind is allowed between the experiment participants.
4. Usage of mobile phones is not permitted during the experiment.

5. After you fill out both parts of the questionnaire, please remain seated and wait for further instructions by the moderator.

Lastly, I would like to thank you for the time spent on experiment. After finishing the experiment, my next step is to analyze the data. Thank you again!

### **Experiment with the second group ( 8 minutes)**

During the experiment, experiment moderator will be seated in the back of the room monitoring experiment protocol. The moderator will make sure that all participants are following the given guidelines and will monitor experiment protocol and time.

### **Brief break for cleaning up the classroom before the entrance of the third group**

Introduction (2 minutes)

**Moderator:** “Greetings everyone! My name is Adela and first of all I would like to thank you for participating in this experiment, and all your contribution will be useful in recording the results needed for my senior project.

I would like to point out some guidelines that need to be followed during this experiment.

1. This experiment will last exactly 10 minutes.
2. In front you there is a plate with a piece of cake on it, on your left side you will notice a questionnaire you will need to fill out the first page of the questionnaire before eating. You will need to fill out the second page of the questionnaire after eating the cake.
3. Please take in consideration that no interaction of any kind is allowed between the experiment participants.
4. Usage of mobile phones is not permitted during the experiment.
5. After you fill out both parts of the questionnaire, please remain seated and wait for further instructions by the moderator.

Lastly, I would like to thank you for the time spent on experiment. After finishing the experiment, my next step is to analyze the data. Thank you again!

### **Experiment with the third group ( 8 minutes)**

During the experiment, experiment moderator will be seated in the back of the room monitoring experiment protocol. The moderator will make sure that all participants are following the given guidelines and will monitor experiment protocol and time.

### **Brief break for cleaning up the classroom before the entrance of the fourth group**

Introduction (2 minutes)

**Moderator:** “Greetings everyone! My name is Adela and first of all I would like to thank you for participating in this experiment, and all your contribution will be useful in recording the results needed for my senior project.

I would like to point out some guidelines that need to be followed during this experiment.

1. This experiment will last exactly 10 minutes.
2. In front you there is a plate with a piece of cake on it, on your left side you will notice a questionnaire you will need to fill out the first page of the questionnaire before eating. You will need to fill out the second page of the questionnaire after eating the cake.
3. Please take in consideration that no interaction of any kind is allowed between the experiment participants.
4. Usage of mobile phones is not permitted during the experiment.
5. After you fill out both parts of the questionnaire, please remain seated and wait for further instructions by the moderator.

Lastly, I would like to thank you for the time spent on experiment. After finishing the experiment, my next step is to analyze the data. Thank you again!

**Experiment with the fourth group ( 8 minutes)**

During the experiment, experiment moderator will be seated in the back of the room monitoring experiment protocol. The moderator will make sure that all participants are following the given guidelines and will monitor experiment protocol and time.

Figure 8. *Experiment questionnaire*

Dear Survey Participant:

My name is Adela Bijadija Custovic and I am a senior student at RIT Croatia Dubrovnik, a global campus of Rochester Institute of Technology, based in Rochester, New York.

For my final research project in International Hospitality and Service Management, I am examining the impact of various factors on dining experience.

Your participation is completely voluntary. The information you provide on this survey will be kept completely anonymous and confidential. There is no risk to you. In order to ensure that all information will remain confidential, please do not include your name in your answers.

If you choose to participate, please answer all questions as honestly and accurately as possible.

Thank you for taking the time to assist me in my educational endeavors.

If you would like additional information about this survey or my research project, please contact me at [axb5248@g.rit.edu](mailto:axb5248@g.rit.edu) or my mentor, Professor Vanda Bazdan, at [vanda.bazdan@croatia.rit.edu](mailto:vanda.bazdan@croatia.rit.edu)

Sincerely,

Adela Bijadija Custovic

1. Gender:

- Male  Female

2. Please state your age. \_\_\_\_\_

3. How often do you eat out?

- Never  about once a year  several times a year  about once a month  
 several times a month  about once a week  2-3 times a week  
 more than 3 times a week

4. Please specify what kind of restaurants do you visit usually?

- fine dining  fast food restaurants  casual dining  family style restaurant  
 student cafeteria (“menza”)  other, please specify: \_\_\_\_\_

5. On the scale 1-5 please specify how hungry do you feel in this moment. (1 – not hungry at all, 2 – slightly hungry, 3 – moderately hungry, 4 – very hungry, 5 – extremely hungry).

- 1 2 3 4 5

Next questions are about the dish you see in front of you; try to answer them honestly before eating.

Please rate your satisfaction on a 10-point scale in which 1 stands for “not at all” and 10 stands for “extremely”.

1. How complex does this dish look.	1 Not at all	2	3	4	5	6	7	8	9	10 Extremely
2. How much do you like the food presentation?	1 Not at all	2	3	4	5	6	7	8	9	10 Extremely
3. Please rate how artistically arranged you think this plate is.	1 Not at all	2	3	4	5	6	7	8	9	10 Extremely
4. How tasty does this dish look?	1 Not at all	2	3	4	5	6	7	8	9	10 Extremely
5. How healthy do you think this dish is.	1 Not at all	2	3	4	5	6	7	8	9	10 Extremely

6. How much would you be willing to pay for this dish? (in Croatian Kuna)\_\_\_\_\_

After you are done eating, please answer next questions.

Please rate your satisfaction on a 10-point scale in which 1 stands for “not at all” and 10 stands for “extremely”.

7. How much did you like this dish?	1 Not at all	2	3	4	5	6	7	8	9	10 Extremely
8. How tasty did you find the dish?	1 Not at all	2	3	4	5	6	7	8	9	10 Extremely
9. How full are you after eating this dish?	1 Not at all	2	3	4	5	6	7	8	9	10 Extremely
10. How interested are you in the visual arts?	1 Not at all	2	3	4	5	6	7	8	9	10 Extremely

11. After tasting the food, how much would you be willing to pay for the dish?

(in Croatian Kuna)\_\_\_\_\_

12. Do you consider yourself a “foodie“? (A foodie is a person with a particular interest in food; a gourmet. )

Yes       No

Figure 9. *T-test results comparing attractiveness of food presentation before eating*

**Group Statistics**

	Group	N	Mean	Std. Deviation	Std. Error Mean
How complex does this dish look.	modern	19	5,84	2,115	,485
	traditional	21	4,33	2,834	,618
How much do you like the food presentation?	modern	19	7,26	2,513	,577
	traditional	21	4,24	2,931	,640
Please rate how artistically you think this plate is.	modern	19	6,53	2,736	,628
	traditional	21	3,24	3,064	,669
How tasty does this dish look?	modern	19	8,37	2,166	,497
	traditional	21	5,57	2,501	,546
How healthy do you think this dish is.	modern	19	4,16	2,522	,579
	traditional	21	4,48	2,977	,650

Figure 10. *T-test results comparing tastiness of traditional and modern banana roll*

**Group Statistics**

	Group	N	Mean	Std. Deviation	Std. Error Mean
How complex does this dish look.	modern	19	5,84	2,115	,485
	traditional	21	4,33	2,834	,618
How much do you like the food presentation?	modern	19	7,26	2,513	,577
	traditional	21	4,24	2,931	,640
Please rate how artistically you think this plate is.	modern	19	6,53	2,736	,628
	traditional	21	3,24	3,064	,669
How tasty does this dish look?	modern	19	8,37	2,166	,497
	traditional	21	5,57	2,501	,546
How healthy do you think this dish is.	modern	19	4,16	2,522	,579
	traditional	21	4,48	2,977	,650

Figure 11. *T-test comparison between foodies and non-foodies*

<b>Group Statistics</b>					
	Do you consider yourself a foodie?	N	Mean	Std. Deviation	Std. Error Mean
On the scale 1-5 please specify how hungry do you feel in this moment.	yes	18	3.61	1.037	0.244
	no	22	2.59	1.403	0.299
How complex does this dish look.	yes	18	5.50	2.915	0.687
	no	22	4.68	2.317	0.494
How much do you like the food presentation?	yes	18	6.67	2.990	0.705
	no	22	4.86	3.028	0.646
Please rate how artistically arranged you think this plate is.	yes	18	5.89	3.376	0.796
	no	22	3.91	3.069	0.654
How tasty does this dish look?	yes	18	7.22	2.579	0.608
	no	22	6.64	2.854	0.609
How healthy do you think this dish is.	yes	18	5.72	2.886	0.680
	no	22	3.18	2.039	0.435
How much would you be willing to pay for this dish? In Croatian Kuna	yes	18	12.9994	5.45441	1.28562
	no	22	13.9091	4.27517	0.91147
How much did you like this dish?	yes	18	8.00	1.940	0.457
	no	22	7.82	1.893	0.404
How tasty did you find the dish?	yes	18	8.06	1.830	0.431
	no	22	8.09	1.849	0.394
How full are you after eating this dish?	yes	18	7.50	2.229	0.525
	no	22	6.55	2.262	0.482

How interested are you in the visual arts?	yes	18	6.44	2.812	0.663
	no	22	5.91	3.191	0.680
After tasting the food, how much would you be willing to pay for the dish?	yes	18	15.8883	7.85761	1.85206
	no	22	14.6364	3.94661	0.84142

Figure 12. *Comparison of foodies and non-foodies perception of banana roll*

<b>Group Statistics</b>					
		Do you consider yourself a foodie?	N	Mean	Std. Deviation
How much did you like this dish?	yes		18	8,00	1,940
	no		22	7,82	1,893
How tasty did you find the dish?	yes		18	8,06	1,830
	no		22	8,09	1,849
How full are you after eating this dish?	yes		18	7,50	2,229
	no		22	6,55	2,262
How interested are you in the visual arts?	yes		18	6,44	2,812
	no		22	5,91	3,191

Figure 13. Comparison of participants who were hungry and tastiness of the food after eating

**Correlations**

		How much did you like this dish?	How tasty did you find the dish?	How full are you after eating this dish?	How interested are you in the visual arts?
How much did you like this dish?	Pearson Correlation	1	.890**	.561**	.509**
	Sig. (2-tailed)		0,000	0,000	0,001
	N	40	40	40	40
How tasty did you find the dish?	Pearson Correlation	.890**	1	.460**	.468**
	Sig. (2-tailed)	0,000		0,003	0,002
	N	40	40	40	40
How full are you after eating this dish?	Pearson Correlation	.561**	.460**	1	.497**
	Sig. (2-tailed)	0,000	0,003		0,001
	N	40	40	40	40
How interested are you in the visual arts?	Pearson Correlation	.509**	.468**	.497**	1
	Sig. (2-tailed)	0,001	0,002	0,001	
	N	40	40	40	40
After tasting the food, how much would you be willing to pay for the dish?	Pearson Correlation	.360 <sup>+</sup>	.339 <sup>+</sup>	0,138	0,253
	Sig. (2-tailed)	0,022	0,033	0,394	0,115
	N	40	40	40	40