Designed by Groupe-Dejour.de

Does Color Affect Taste?

Science Film Festival — Knowledge Through Entertainment

Science Film Festival Film

Bodypedia: Brain

Introduction

The taste buds on your tongue detect flavors and food groups, and help you identify the foods you eat. However, other senses play a role in how we experience food. You probably know that the smell of foods can have a strong effect on how they taste, but did you know that the appearance of food also changes how we experience it? Because we usually look at food before we put it in our mouths, the very first information your brain gets about any particular food comes from your eyes!

From an early age, we learn to associate colors with flavors. When something is orange, we expect an orange flavor. If you tasted green pudding, you would be surprised to find that it had a cherry flavor. Discrepancies between the appearance of food and their taste can make it more difficult to identify the flavoring.

Research has shown that the appearance of food can dramatically affect how it tastes. In one study, participants ate a plate of normal-looking steak and French fries. All the participants said they enjoyed the food, and it tasted fine. However, when the lights were brightened, it was revealed that the steak was dyed blue, and the fries were dyed green. When they saw this, many of the participants refused to eat any more of the food, and a few even grew sick! In this experiment, you will explore how the appearance of the food we eat affects how it tastes. Do not worry—there will not be any blue steaks!

Key Objectives

- To understand that the appearance of the food we eat can affect how it tastes.
- To understand that our senses can affect each other.

Materials

- Volunteers (at least 3)
- Large bottle of apple juice
- Red, green, and blue food coloring
- Clear disposable cups (3 per volunteer)
- Permanent marker
- Drinking glasses (1 per volunteer)
- Water
- Table where you and your volunteers can sit
- Timer or stopwatch
- Lab notebook

Safety Instructions

It is important that your volunteers do not know that there is apple juice in each cup! The idea is that your volunteer should expect something different in each cup. Therefore, do not let them see you prepare the drinks ahead of time!

Intermediate

Resource Type
Experiment

Topics
Perception

Subjects
Biology, Neuroscience

Keywords
Taste buds, Flavor, Senses

Time For Activity
30 – 45 minutes

Guiding Questions

1. Do you prefer certain types of foods that are a certain color? Do you associate that color with a flavor? For example, red cherry-flavored candy instead of green lime-flavored?

2. Do you think the color of a food or drink will affect how it tastes? What if the color is "unexpected" (for example, if red and green were switched for cherry and lime flavors)?

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Tasks/Steps

1. Use your marker to number the clear cups. Label one third of the cups with the letter A, the next third with the letter B, and the final third with the letter C.
2. Add about 1/4 cup of apple juice to each clear cup.
3. Line up all the cups labeled 'A' in a row, all cups labeled 'B' in a row, and all the cups labeled 'C' in a row.
4. Add two drops of blue food coloring to the cups labeled A (add more food coloring if the color is not dark enough).
5. Add two drops of green food coloring to the cups labeled B (add more food coloring if the color is not dark enough).
6. It should be nice and blobby by now. As you play with your slimy concoction, it will become stretchier and easier to hold.
7. Make a copy of the table in your lab notebook.
8. Fill the three drinking glasses with filtered water.
9. Have your first volunteer sit down at the table. Line up a cup labeled A, B, and C in front of your volunteer. Also give them a glass of water.
10. Ask them to start by drinking some water to cleanse their palate.
11. Tell your volunteer that you want them to taste the drink in cups A, B, and C, drinking water in between each. They have two minutes to taste the drinks. Once they have tasted the drink in each cup, they should rate them from the one they liked the best, to the one the liked the least. Your volunteer can taste each cup more than once, but they should drink water in between each taste.
12. Have your volunteer start the test. When they taste their first cup, start your timer or stopwatch. Do not answer any questions your volunteer asks you, or react to anything they say!
13. After two minutes, stop your timer and tell your volunteer to stop tasting.
14. Ask them which drink was their favorite. In the 'Volunteer 1' column, mark their favorite cup with the number '3.' For example, if your volunteer said they liked the drink cup B best, you would write the number 3 in the 'B' row under 'Volunteer 1.'
15. Ask your volunteer which drink they liked least. In the 'Volunteer 1' column, record their least favorite cup with the number '1.'
16. Write the number '2' in the remaining row.
17. Repeat steps 1-9 with your remaining two or more volunteers. Record their responses in the corresponding columns.
18. Add the values across each row and record the totals in the 'Total' column. For example, if cup A was rated a 2, 1, and 2 by the three volunteers, you would record '5' in the Total column for cup A.
19. Which cup has the highest total? Which cup has the lowest total? Were there any patterns in which cup the volunteers seemed to prefer? How does this compare to your prediction about whether color affects taste?

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Letter On Cup	Volunteer 1	Volunteer 2	Volunteer 3	Total
A				
B				
C				

Authors/Source

Arnett, M., & Finio, B. (2019, February 8). Does Color Affect Taste? Retrieved from

https://www.sciencebuddies.org/science-fair-projects/project-ideas/FoodSci_p081/cooking-food-science/does-color-affect-taste