Project Info

Topic: Psychology ~ Colors and the Brain

Type of Project: Experimental

Question: How does the color of drinks influence our initial opinion on it, and how will that affect how your mind perceives it? Can the color of a drink deceive the mind into believing it is something else?

Manipulated Variable: The manipulated variable is the color or tint of the drink that is being tested (red, orange, pink, blue, brown, yellow, green, clear).

Responding Variable: The responding variable is how the subject responds to the foods presented before them, and what their biases and opinions are. To test this, we will ask them to rate different aspects of the drink on a scale of 1–5, and then give us their final opinion of the drink (record, notebook).

Controlled Variable(s): Type of lemonade, amount of lemonade per serving, temperature of the lemonade, amount of food coloring, type of cup, lighting, location of test, knowledge of lemonade color (none).

Hypothesis: If the color of the drink is changed, then the participants will perceive its taste differently, affecting how their mind will react to it. This means that they will taste the lemonade slightly differently each time, which would change how much they like it. For colors like red, pink, brown and orange, the participants will feel that they are sweeter and fruitier, ranking them in the top 50%. For the other colors, like green, yellow, and blue, the participants will feel that they are "cooler" and more refreshing, ranking them based on the sweet and sour flavour balance.

Experiment Ethics:

For our science fair project, we are doing an experimental entry. In order to do this and conduct research effectively, we will need to use human participants. All the human volunteers must do is drink out of 8 cups with Simply Lemonade. This lemonade will be shown as 8 different colors through alteration by simple, store–bought food coloring. After drinking the lemonade, the participants will be asked to rate different aspects of its

flavor on a scale of 1–5, including sweetness, sourness, blandness, and intensity. They will also be asked what flavour they think the drink is, before they are told the reality of the drink at the end of the experiment session.

Project Description:

For our Science Fair project, we chose to understand the concept of color psychology and experiment to find out more about what it is and how it works. Our question for this experiment is "How does the color of food influence our initial opinion on it, and how will that affect how your mind responds to it?" Firstly, to understand exactly what we were experimenting with, we researched various websites about the background of color psychology and multisensory. Multisensory, the base of color psychology with food, is when the brain uses multiple senses when identifying and processing things around us. With food, multisensory is when we use our sight, smell, and even touch to determine how we feel about a food. Even though our tongues make our final decision about whether or not we like the food, our brain's processing of the texture, smell, and especially color can influence whether or not we even try it at all!

In our experiment specifically, we plan on testing how the colors of drinks influence a person's perception of how it tastes. When it comes to beverages, colors like red and pink are presumed to be sweet or berry-tasting. Red is one of the most appetizing colors because it even triggers biological responses, sparking excitement with the likely taste of sweetness or ripe juiciness. Orange, yellow, and light greens are normally associated with sour due to their common occurrence with citrus fruits. Colors like dark green or blue can be confusing as they may be seen as bitter or almost tasteless, or they could vary from person to person. Dark green could be seen as herbal or minty, and blue, though uncommon in drinks, could be perceived as blue raspberry or coconut. Lastly, brown, purple, or any other dark colors could be seen as bitter or bland, especially as they are quite uncommon in drinks and usually avoided. Even though a beverage's taste

could be entirely different from its presumed taste, its color can completely change people's ideas on that. Our experiment will test just how strong the influence of color really is.

To test how much color influences a person's thoughts on it, our plan is to see how color can influence what a human thinks about a flavour before tasting it, and how it even affects their opinions on it after it. To effectively test this, we will be using a somewhat clear, tasteless drink dyed in multiple different colors. In our experiment, we will be using lemonade dyed different colors by food dye. The lemonade's flavour will be the same for all drinks, but the color will be changed with dye to influence what a person presumes it will taste like. Instead of using water, which has no taste, we are using lemonade because it has a mild taste that could be perceived differently from person to person. We will also slightly dilute the lemonade, to make sure the taste doesn't come off too strong or too distinct. Firstly, we will present all of the lemonade samples to each participant, allowing them to select which one they believe will taste the best. Then, that participant will be given a taste of each of the drinks, starting with the one that they believed they would like best. After tasting them all, the participant will rank the drinks in order from most to least favorite. Then, they will be told about the reality of the drinks after a blind taste test, and asked again which ones they believe to taste best. All the information will be recorded, and we will separate them into 2 or 3 tables to compare how each participant reacted during each stage.

Our hope is that this experiment will let us know four main things. Firstly, we want to find out which colors appear most appetizing in drinks. With this information, it could also be integrated into marketing and selling for consumers as drinks have a variety of tastes, and a box in a specific color will match closely to what people would think of that color in a drink. By allowing participants to choose their favorite drink only by sight, we can get a good idea of what colors or types of colors are more appealing and eye-catching, without scaring people off. Next, we want to also know how the color of something

affects your opinion on it in the long-term. When each participant chooses their favorite before tasting it, we want to know if tasting it will make their opinion change or stay the same. Depending on whether it stays the same or not, we also need to know if knowing the truth about all the drinks will cause their opinion to change. During their final tasting, they will decide whether they all taste different or whether they now taste the same in their mind. Thirdly, we want to know their opinions on all the other colors, and what they associated each one with. We will use this information to see if they got the "flavours" correct, and why they didn't if they don't get it quite right. This information could also be used in marketing when packaging specific products, as it could hit more at what general flavour category it will be in. Lastly, we will observe which drinks are consumed the fastest and the most eagerly so we can determine which perceived "flavours" are more desirable. During the procedure, we will record notes, jot down data, and also get participants to give descriptions of what they think about each drink.

In the end, we hope that this experiment will help us to deeper understand the concept of food psychology, and how color ties into it.

Background Research

General Research:

- A lot of the time, people judge their food by looks, and colour is a big part of it
    - Our brain subconsciously makes connections between certain colors and their "tastes." While that food may not actually taste like that, people will be unwilling to try new things if they
- Some unattractive food colours are:
    - Black, black foods are not as common. People do not like to eat the colour black because usually food that's turned bad(moldy or contaminated) is black or dark green, and also with burnt foods.
        - Green (unless in vegetables)
        - Blue, because it is very uncommonly seen in cooking or foods, except everyday blue foods like blueberries
- The brain perceives colours as specific tastes. For example, the colour red might be associated with sweetness or spiciness
- Common foods that have an unexpected colour that is different from their original colour or the colour they're supposed to be also negatively impacts one's appetite.
- **Red** = most appetizing flavour, seen as fruity and sweet
- **Blue** = unique and refreshing, cold
- **Yellow** = bright and "happy," balanced sweetness and sourness
- **Green** = healthy (vegetables are mostly green), fruity or "nature-y"
- **Orange** = energizing and tropical

General Information:

Lot's of times, people say that we "eat with our eyes," because almost always, people judge their food based on looks before eating. The main factor that changes our opinion on a food's flavour is the tone that we see. More often than not, our subconsciousness presumes the taste of food based on its color or tint, linking it to different flavours and textures. Sometimes, our brain even uses the colors that we see and relates them to other colors. We chose this topic because we knew that we wanted to incorporate something psychological into our science fair project. Being people who loved to eat, we both were curious what aspects played into how people made their opinions about certain foods, specifically when it came to drinks. Since taste and flavour were obvious aspects, we really wanted to dive into how **color** affects a person's **perception** of the drink, and how it can possibly overrule what the tastebuds actually perceive.

Most foods of the color black, dark brown, or dark green are not very favourable, and food with that color is likely to be avoided by instinct. When people come across black or green-ish food, they tend to associate it with molding or rotting, as it is an unusual color for food. On the contrary, foods that contain vibrant colors are often expected to be better tasting, as people can link those colors to many more flavours.However, it should be noted that our subconsciousness can change our opinion whether it is a food or a drink.

For our project, we decided to test how the color of a *drink* would affect a person's perception of it, because foods come in so many different shapes, sizes, and genres, that it would be difficult to get a substantial and accurate picture of how the color could affect it. However, drinks, as liquids, can only come in one or two forms, which would give us a better understanding of how only the color can affect the perceived taste. In drinks, the flavours are also expanded to a much wider range, as drinks come with almost unlimited possibilities, even if they are bad ones.

Background Research:

https://www.health.harvard.edu/healthbeat/foods-linked-to-better-brainpower

https://link.springer.com/article/10.3758/s13423-023-02298-y?fromPaywallRec=false

https://link.springer.com/article/10.1186/s13411-015-0031-3#:~:text=Adding%20green%20food%20coloring%20decreased,for%20the%20detection%20of%20bitterness

https://metrobi.com/blog/how-does-color-affect-taste/?st_source=ai_mode#:~:text=Perceived%20flavor%20intensity%20is%20significantly,the%20actual%20flavour%20remains%20unchanged

https://thevarsity.ca/2025/09/21/the-multisensory-experience-of-eating/

Multisensory is involving multiple senses and memories when encountering a specific thing. This concept can be used in multiple ways and areas, and recently it has been implemented into education for younger students, teaching them things through all of their 5 senses. When it comes to both food and drinks, while it may seem like your tongue and taste buds do all of the work, what your eyes see before and during eating actually plays a significant role in what you

To understand exactly what we were experimenting with, we researched various websites about the background of color psychology and multisensory. Multisensory, the base of color psychology with food, is when the brain uses multiple senses when identifying and processing things around us. With foods and drinks, multisensory is when we use our sight, smell, and even touch to determine how we feel about a food.

Even though our tongues make our final decision about whether or not we like the food, our brain's processing of the texture, smell, and especially color can influence whether or not we even try it at all!

MWhen it comes to drinks, one of the most important senses that we use to determine whether or not we like the drink is our eyes. Because drinks are generally more simple, our eyes rely mainly on color to figure out our opinion on the drink. For foods, multisensory could rely on shape, texture, size, color, smell, and so much more, so using drinks are the best way to figure out whether color actually plays a role in the taste. In addition, drinks are less likely to have their color affect their taste greatly, because most contain unflavoured dyes to give them their appearance. That fact actually helps us, however, because that will show that any change in the data is truly because of the color, because the drinks have no smell, no unique shape, and no actual flavouring to convince the participants.

https://kitchen-theory.com/the-perfect-meal-the-multisensory-science-of-food-and-dining/
https://www.sciencedirect.com/science/article/pii/S0950329323002033
https://tracegains.com/blog/food-and-color-what-does-it-all-mean/#:~:text=Color%20choices%20when%20it%20comes%20to%20food&text=Many%20studies%20suggest%20that%20visual,taste%20like%20lime%20or%20apple. As
Red = most appetizing
Blue = creative, unique
Yellow = unique, happy
Green = healthy b/c vegetables are mostly green, represents nature
Orange = energy
In packaging and foods, the color "Mocha Mousse". This color shows up in many appetizing foods, such as ice cream, coffee, cake and other

https://www.foodunfolded.com/article/how-does-color-affect-the-way-we-eat
Whenever we look at food, we subconsciously judge the food's taste, flavor, and even texture based on what we can see from the outside. When our brains make inferences about food and how it will taste, the main aspect that we take into consideration is its color or tint. Sometimes, the color of food will not only give us a hint to how it will taste, but it will also directly influence whether or not we enjoy it, despite whatever it may actually taste like. Studies have shown that even infants and toddlers, maybe even especially, have picked up on colors and their "taste," changing their opinions on specific food and making it harder for them to try certain new things.

Our brains correlate colors and foods based on our past experiences and the environment around us. For example, if you have had green candy before and it tasted unpleasantly sour, it could potentially create hesitance when met with that same color again. While foods and drinks have slightly different color and flavour connections, eating or drinking a lot of a specific color of food or beverage could influence your decisions later on, especially when it comes to trying new foods. Sometimes, before we actually have an encounter with specific foods, especially at an early age, we can pick up how things may taste based on the colors and scents in nature. Many people know that most fruits and flowers come in bright, vibrant colors, giving them their sweet tastes and fresh scents in the case of flowers. Based on that alone, the brain can infer that drinks or sweets of those colors will likely taste sweet or refreshing, except for bright yellows, greens, and sometimes oranges. Because of that, the region that you live in can also influence your opinions on flavours. A test conducted by Professor Spence showed that Taiwanese participants expected a clear blue drink to taste like mint, while participants from the UK expected it to taste somewhat like raspberry or blueberry. Due to the differences in their environment, including plants, fruits, and flowers, the two countries had totally different perspectives on the nameless blue drink.

In some cases, color can also invalidate the actual taste of the food or beverage, because our brain's former experience or link to the color is so strong that it overrules the signals that we actually get when tasting. An experiment conducted showed that white wine dyed red went completely unnoticed, as the subconsciousness of the brain caused the tasteless red dye added to the drink to seem like an entirely different drink. However, because color sometimes overrides the real taste, foods with unusual or outstanding colors can confuse our brain, and in turn, our taste buds. Most times, when there is food that contains a color that isn't so common in that food, like green steak, people will draw away from it, their subconscious mind telling them that it probably will taste bad.

https://flavourjournal.biomedcentral.com/articles/10.1186/s13411-015-0031-3#:~:text=Adding%20green%20food%20coloring%20decreased,for%20the%20detection%20of%20bitterness.

In everyday life, color is one of our most important of the five senses, as it can influence what we think, and how we react to specific things in our lives. Food is not discluded as color is one of the major leading factors that lead us to our conclusions about specific food. In countless experiments, scientists have found that the color, intensity, and saturation of food can all lead to our decisions about whether or not to eat or drink it, and it can even change based on whether we're looking at a food or a drink. Just think, if you are looking at a menu that has pictures next to the food, or looking at a screen above a fast-food counter, how will you really know whether you like it or not, especially on your first time? While your memories of food also

influence your choices, those memories of past experiences are often and probably based on colors as well, showing that color has a strong link to what types of food we prefer and choose.

Since color has such an important role in influencing our expectations of a specific food, when the taste is strong, but not related to the color, it can cause confusion and uncertainty, and it could possibly make a person hesitant to try that same food/drink again. Therefore, if the taste of the item is less significant or unique, then our brain's subconsciousness tends to alter the taste in our mind, so that it is a little closer to what we were expecting. This can change among different age groups and different cultures, as your experiences and environment can affect how your brain subconsciously processes colors in relation to what's in your mouth.

Along with color, people also expect the intensity or saturation of the item being ingested to how strong the flavour will be. If there was a pack of gummies with different colors, people may expect a soft, light yellow gummy to be only slightly tangy, but a bright, highlighter yellow gummy would probably be avoided as it would come off as intensely sour. The same is true for sugar, and scientists reported a 10% increase in perceived sweetness when conducting an experiment on the intensity of "sweet colors" on food. Sometimes, specific tastes that are linked with colors that don't match can cause misinterpretation of food, which makes our brains sometimes unreliable sources of information.

In general, the way that people perceive their food based on color can rely on multiple factors: their age group, as certain people (especially those of young age) tend to be subject to mood/emotion changes from intense or sudden colors; the type of taste, because some specific genres of taste, like saltiness, aren't affected as much by color; the type of color, since warm colors can inject different emotions than cool colors; and the way of which the food or beverage is first contacted, as it could change if dealt with orthonasally (through the nose) or retronasally (through the first taste).

https://www.bonappetit.com/story/how-food-colors-determines-taste-and-cravings?srsltid=AfmBOorfaGJHvSXCinpeAtAC6lf2GMEeiMB-1bWx9qaIVAX6V3Er609a

No matter the situation, our opinions on food and drinks are mainly controlled by their color. When we first gaze upon something that we could potentially eat or drink, our brain immediately connects its color to how much we want to eat it, and our brain also decides how we feel about that food. In fact, there is research that shows that colorblind people are less likely to be picky due to their inability to know the true color of their food. Along with the color of the actual food, the packaging or the photograph for the marketing can also link to whether or not we are willing to eat the food. In general, unappealing colors like

neon colors or dark murky colors like brown and green can influence whether or not we will give it a second thought. The reactions that we have to color come from multiple sources around us.

Key Term: Multisensory

Multisensory is involving multiple senses and memories when encountering a specific thing. This concept can be used in multiple ways and areas, and recently it has been implemented into education for younger students, teaching them things through all of their 5 senses. When it comes to both food and drinks, while it may seem like your tongue and taste buds do all of the work, what your eyes see before and during eating actually plays a significant role in what you

To understand exactly what we were experimenting with, we researched various websites about the background of color psychology and multisensory. Multisensory, the base of color psychology with food, is when the brain uses multiple senses when identifying and processing things around us. With foods and drinks, multisensory is when we use our sight, smell, and even touch to determine how we feel about a food. Even though our tongues make our final decision about whether or not we like the food, our brain's processing of the texture, smell, and especially color can influence whether or not we even try it at all!

When it comes to drinks, one of the most important senses that we use to determine whether or not we like the drink is our eyes. Because drinks are generally more simple, our eyes rely mainly on color to figure out our opinion on the drink. For foods, multisensory could rely on shape, texture, size, color, smell, and so much more, so using drinks is the best way to figure out whether color actually plays a role in the taste. In addition, drinks are less likely to have their color affect their taste greatly, because most contain unflavoured dyes to give them their appearance. That fact actually helps us, however, because that will show that any change in the data is truly because of the color, because the drinks have no smell, no unique shape, and no actual flavouring to convince the participants.

Conducting our Experiment (based on our research!):

In our experiment specifically, we plan on testing how the colors of drinks influence a person's perception of how it tastes. When it comes to beverages, colors like red and pink are presumed to be sweet or berry-tasting. Red is one of the most appetizing colors because it even triggers biological responses, sparking excitement with the likely taste

of sweetness or ripe juiciness. Orange, yellow, and light greens are normally associated with sour due to their common occurrence with citrus fruits. Colors like dark green or blue can be confusing as they may be seen as bitter or almost tasteless, or they could vary from person to person. Dark green could be seen as herbal or minty, and blue, though uncommon in drinks, could be perceived as blue raspberry or coconut. Lastly, brown, purple, or any other dark colors could be seen as bitter or bland, especially as they are quite uncommon in drinks and usually avoided. Even though a beverage's taste could be entirely different from its presumed taste, its color can completely change people's ideas on that.

Our experiment will test just how strong the influence of color really is.

To test how much color influences a person's thoughts on it, our plan is to see how color can influence what a human thinks about a flavour before tasting it, and how it even affects their opinions on it after it. To effectively test this, we will be using a somewhat clear, tasteless drink dyed in multiple different colors. In our experiment, we will be using lemonade dyed different colors by food dye. The lemonade's flavour will be the same for all drinks, but the color will be changed with dye to influence what a person presumes it will taste like. Instead of using water, which has no taste, we are using lemonade because it has a mild taste that could be perceived differently from person to person. We will also slightly dilute the lemonade, to make sure the taste doesn't come off too strong or too distinct. Firstly, we will present all of the lemonade samples to each participant, allowing them to select which one they believe will taste the best. Then, that participant will be given a taste of each of the drinks, starting with the one that they believed they would like best. After tasting them all, the participant will rank the drinks in order from most to least favorite. Then, they will be told about the reality of the drinks after a blind taste test, and asked again which ones they believe to taste best. All the information will be recorded, and we will separate them into 2 or 3 tables to compare how each participant reacted during each stage.

To do this experiment properly, we will only allow for 1 sip of the lemonade to ensure that we get the participants first impression. Over time, drinking the same drink consistently can change your opinions if you focus too hard on it, and we just want to get the original impression that the participant gets from the drink.The color of each drink will not be directly stated to the participant, as it will make sure that they aren't already thinking about the exact color, and we will get a true first impression. Instead there will be letter markings on each cup, so that only us as conductors know what each color is.

When recording our data from the experiments, we will make sure to pay attention to any trends or patterns that occur, hence asking the participants if they have any other comments about the taste that they would like to share. Once all of the data is collected, we will take an average for each category/aspect we tested. With the mean/median average, we will create 5 graphs: color vs. sweetness, color vs. sourness, color vs. blandness, color vs. intensity, and color vs. presumed flavour. Using this data, we will record any observations and links like flavor and sweetness or sourness, intensity and blandness, and especially sweetness or sourness and flavor.

We will need one of each type of data table for each participant, as one table acts as all of their surveys for each type of test combined. Therefore, each participant will use up 3 data tables, and we will calculate the average of all 3 tests for all participants into a final 3 data tables. For each drink sample, the average sweetness, sourness, bitterness, and intensity ratings will be calculated before graphed. For flavour guess and descriptions, we will just be collecting the most commonly guessed flavours and the most commonly used terms for description in the graphs.

Our Purpose:

Our hope is that this experiment will let us know four main things. Firstly, we want to find out which colors appear most appetizing in drinks. With this information, it could also be integrated into marketing and selling for consumers as drinks have a variety of tastes, and a box in a specific color will match closely to what people would think of that color in a drink. By allowing participants to choose their favorite drink only by sight, we can get a good idea of what colors or types of colors are more appealing and eye-catching, without scaring people off. Next, we want to also know how the color of something affects your opinion on it in the long-term. When each participant chooses their favorite before tasting it, we want to know if tasting it will make their opinion change or stay the same. Depending on whether it stays the same or not, we also need to know if knowing the truth about all the drinks will cause their opinion to change. During their final tasting, they will decide whether they all taste different or whether they now taste the same in their mind. Thirdly, we want to know their opinions on all the other colors, and what they associated each one with. We will use this information to see if they got the "flavours" correct, and why they didn't if they don't get it quite right. This information could also be used in marketing when packaging specific products, as it could hit more at what general flavour category it will be in. Lastly, we will observe which drinks are consumed the fastest and the most eagerly so we can determine which perceived "flavours" are

more desirable. During the procedure, we will record notes, jot down data, and also get participants to give descriptions of what they think about each drink.

Experiment Information

Name(s): Mofe Aderounmu, Aspen Ma
Working with a partner? (**Yes**/No)

Chosen topic: How does the color of food influence our initial opinion on it, and how will that affect how your mind responds to it?
Manipulated Variable: The manipulated variable is the color or tint of the food that is being tested (red, orange, pink, blue, brown, etc.)
Responding Variable: The responding variable is how the subject responds to the foods presented before them, and what their biases and opinions are. To test this, we will ask them to rate different aspects of the drink on a scale of 1–5, and then give us their final opinion of the drink (record, notebook).
Controlled Variable(s): Type of lemonade, amount of lemonade per serving, temperature of the lemonade, amount of food coloring, type of cup, lighting, location of test, knowledge of lemonade color (none).
Control Group: Clear/undyed lemonade
Control Condition: The blind taste test (rules out doubt with the batch; hopefully proves our point)

Materials:

- Food Coloring (7)
  - Red
  - Blue
  - Green
  - Yellow
  - Orange
  - Brown
  - Pink
- Volunteers (8)
  - Callista
  - Sophia Y
  - Keira
  - Eunice
  - Mowa
  - Mofe's Mom (MM)
  - Anya
  - Sophia L
- 65 Clear plastic cups

- 2–3 Jugs of Simply Lemonade
- 5 Plastic bottles of water

Things to buy: Aspen ~ clear plastic cups (small–medium), 2–3 jugs of simply lemonade; Mofe ~ food coloring (red, blue, green, orange, brown, yellow, pink), clear plastic cups (small–medium)

Setup Procedure:

- Get 2–3 jugs of the same brand of lemonade to ensure identical flavour
- Pour equal amounts of lemonade (––mL) into 8 cups for each participant
    - Pour the lemonade through a filter to remove the pulp
    - Dilute the lemonade with 5 plastic bottle caps of water
- Drop different food coloring into each cup, leaving one without dye for the control group (2 drops)
- Label cups with randomized letters (A, B, C, D, etc.) to make sure there is no distraction

Experiment Procedure:

- Present the lemonade options to the volunteer, not telling them what the drink is
- Allow them to choose which one they think they will like the best w/o drinking it
- Ask them to fill out the survey for each drink (below)
- Proceed to let the volunteer drink out of each cup with their eyes open
- Tell them to rank the drinks from most favorite to least favorite based on their taste
- Ask them to fill out the survey for each drink (below)
- Then tell them to drink from each up with their eyes closed
- Ask them about their favorite drink based on the order you gave the drink
- Ask them to fill out the survey for each drink (below)
- Record all observations + trends; input data into graph
- Repeat steps 1–10 for each person

To do this experiment properly, we will only allow for 1 sip of the lemonade to ensure that we get the participants first impression. Over time, drinking the same drink consistently can change your opinions if you focus too hard on it, and we just want to get the original impression that the participant gets from the drink.

When recording our data from the experiments, we will make sure to pay attention to any trends or patterns that occur, hence asking the participants if they have any other comments about the taste that they would like to share. Once all of the data is collected, we will take an average for each category/aspect we tested. With the mean/median average, we will create 5 graphs: color vs. sweetness, color vs. sourness, color vs. blandness, color vs. intensity, and color vs. presumed flavour. Using this data, we will record any observations and links like flavor and sweetness or sourness, intensity and blandness, and especially sweetness or sourness and flavor.

Schedule:
Wednesday, February 4 – Callista (w/ Mofe) and Sophia L (w/ Aspen)
Saturday, February 7; Sunday February 8 – Mowa, and MM (w/ Mofe)
Tuesday, February 10 – Sophia Y (w/ Mofe) and Keira (w/ Aspen)
Wednesday, February 11 – Anya (w/ Mofe) and Eunice (w/ Aspen)

Survey: (next tab)

Participant Surveys

Taste Perception Survey Format

Sample Letter – ___

1) **How sweet does the sample look?** (circle)

   1 2 3 4 5

   (not sweet –> very sweet)

2) **How sour does the sample look?** (circle)

   1 2 3 4 5

   (not sour –> very sour)

3) **How bitter/bland does the sample look?** (circle)

   1 2 3 4 5

   (not bitter/bland –> very bitter/bland)

4) **How strong do you think the flavor will be?**

   1 2 3 4 5

   (very weak –> very strong)

5) **What flavour do you think it is?**

Survey #1

Taste Perception Survey #1 – Impression Test

Sample Letter – ___

1) **How sweet does the sample look?** (circle)

   1 2 3 4 5

   (not sweet –> very sweet)

2) **How sour does the sample look?** (circle)

   1 2 3 4 5

   (not sour –> very sour)

3) **How bitter/bland does the sample look?** (circle)

   1 2 3 4 5

   (not bitter/bland –> very bitter/bland)

4) **How strong do you think the flavor will be?**

   1 2 3 4 5

   (very weak –> very strong)

5) **What flavour do you think it is?**

Survey #2

Taste Perception Survey #2 – Taste Test

Sample Letter – ___

1) **How sweet does it taste?** (circle)

   1 2 3 4 5

   (not sweet –> very sweet)

2) **How sour does it taste?** (circle)

   1 2 3 4 5

   (not sour –> very sour)

3) **How bitter/bland does it taste?** (circle)

   1 2 3 4 5

   (not bitter/bland –> very bitter/bland)

4) **How strong is the flavor?**

   1 2 3 4 5

   (very weak –> very strong)

5) **What flavour do you think it is?**

   _____

6) **Any other comments about the flavour?**

   _____

Survey #3

Taste Perception Survey #3 – Blind Taste Test

Sample Letter – ___

1) **How sweet does it taste?** (circle)

   1 2 3 4 5

   (not sweet –> very sweet)

2) **How sour does it taste?** (circle)

   1 2 3 4 5

   (not sour –> very sour)

3) **How bitter/bland does it taste?** (circle)

   1 2 3 4 5

   (not bitter/bland –> very bitter/bland)

4) **How strong is the flavor?**

   1 2 3 4 5

   (very weak –> very strong)

5) **What flavour do you think it is?**

   _____

6) **Any other comments about the flavour?**

   _____

Participant Assent Forms

Mofe and Aspen Science Fair: Colors and the Brain

Our experiment intends to study how different colors in food affect people's perception of taste. This project has been approved by the city science fair ethics committee.
You will be given drinks of different colors. These drinks are store bought and safe to consume. After you finish tasting the drinks, you will report on a scale from 1–5 how sweet, sour, bitter, or bland each drink is as well as how strong the flavour is. In addition, you will be asked to make a guess on what flavour you think it is. By the end of this experiment, we will tell you what flavours are which, and what drinks were in each cup.
Please sign next to your name to indicate your assent to participate in the study:

Eunice:

Anya:

Mowa:

Nola (Mofe's Mom):

Callista:

Sophia:

Keira:

Sophia Y:

Experiment Data

Legend/Key ~
a = red
b = green
c = pink
d = brown
e = yellow
f = blue
g = orange
h = clear/uncolored

***the color or each drink will not be directly stated to the participant, as it will make sure that they aren't already thinking about the exact color, and we will get a true first impression

Data Tables
(We will need one of each type of data table for each participant, as one table acts as all of their surveys for each type of test combined. Therefore, each participant will use up 3 data tables, and we will calculate the average of all 3 tests for all participants into a final 3 data tables.)

Drink Sample	Colour vs. Flavour Perception – Impression Test Average					
	Sweetness Rating	Sourness Rating	Bitterness/Blandness Rating	Strength/Intensity Rating	Flavor Guess	Descriptions
A						
B						
C						
D						
E						
F						
G						
H						

Drink Sample	Colour vs. Flavour Perception – Blind Taste Test Average					
	Sweetness Rating	Sourness Rating	Bitterness/Blandness Rating	Strength/Intensity Rating	Flavor Guess	Descriptions
A						
B						
C						
D						
E						
F						
G						
H						

Drink Sample	Colour vs. Flavour Perception – Regular Taste Test Average					
	Sweetness Rating	Sourness Rating	Bitterness/Blandness Rating	Strength/Intensity Rating	Flavor Guess	Descriptions
A						
B						
C						
D						
E						
F						
G						
H						

Participant Data

Participant #1 (Callista)

Drink Sample	Colour vs. Flavour Perception – Impression Test Average					
	Sweetness Rating	Sourness Rating	Bitterness/Blandness Rating	Strength/Intensity Rating	Flavor Guess	Descriptions
A	4	4.5	2	4.5	Cherry	N/A
B	3	4	4	3	Green Apple	N/A
C	5	1	2	4	Raspberry	N/A
D	5	3.5	2.5	5	Cane Sugar/Soda Drink	Almost looked like Dr. Pepper–
E	4	5	2	2.5	Lemon	N/A
F	5	3	3	5	Blue Raspberry	N/A
G	4.5	3.5	2	3	Mango	N/A
H	3	4	3.5	2	Pineapple	Looked washed–out + cloudy–

Drink Sample	Colour vs. Flavour Perception – Blind Taste Test Average					
	Sweetness Rating	Sourness Rating	Bitterness/Blandness Rating	Strength/Intensity Rating	Flavor Guess	Descriptions
A	2.5	3	2	3	Lemon (ade)	N/A
B	3	3.5	1	2.5	Lime	Citrus–y
C	4.5	2	1	3	Lemon/Citrus	N/A
D	3	3	1	4	Lemon	N/A
E	4.5	2.5	1	4	Lemon (ade)	N/A
F	4	4.5	1	5	Mango	N/A
G	3.5	3	2	4	Citrus	N/A
H	3	4	2	4.5	Orange (Juice)	Kind of tasted bland/dilute–

Drink Sample	Colour vs. Flavour Perception – Regular Taste Test Average

	Sweetness Rating	Sourness Rating	Bitterness/Blandness Rating	Strength/Intensity Rating	Flavor Guess	Descriptions
A	4	3	2	4.5	Strawberry	N/A
B	3	4	1	3	Green Apple	Very citrus-tasting-
C	5	3	2.5	5	Lemonade (Pink/Raspberry)	N/A
D	5	2	2	4	Lemonade	Had a sort of cinnamon feel-
E	5	1	3	5	Lime	N/A
F	4.5	1	1.5	4	Mint	Tasted "cool" in a way-
G	3	4	1	3.5	Orange (Juice)	Had a tangy vibe-
H	4	2	4.5	3	Pineapple	A bit blander than most-

Participant #2 (Sophia L)

Drink Sample	Colour vs. Flavour Perception – Impression Test Average					
	Sweetness Rating	Sourness Rating	Bitterness/Blandness Rating	Strength/Intensity Rating	Flavor Guess	Descriptions
A	5	2	1	4	Cherry	N/A
B	4	3	2	3	Honeydew Melon	N/A
C	5	1	1	4	Watermelon	Seemed more concentrated-
D	2	1	3	2	Coffee	Looked a bit like soda-
E	2	4.5	2	5	Lemon	Kind of alarmingly bright-
F	4	2	1	4	Blueberry	N/A
G	4	3	2	4	Orange	N/A
H	2	1	3	2	Coconut	Seemed kind of dilute-

Drink Sample	Colour vs. Flavour Perception – Blind Taste Test Average

	Sweetness Rating	Sourness Rating	Bitterness/Blandness Rating	Strength/Intensity Rating	Flavor Guess	Descriptions
A	4	3.5	1	3	Lime	N/A
B	4	5	1	4	Orange	N/A
C	3.5	3	1.5	4.5	Lemon (ade)	N/A
D	3	4.5	1	4.5	Lime	Most of them tasted similar–
E	2.5	5	2	3.5	Lemon	N/A
F	1	3.5	1	4	Lemon (ade)	N/A
G	3	4	1	5	Rasperry	Had a sweeter taste–
H	4.5	2	2.5	3	Orange	N/A

Drink Sample	Colour vs. Flavour Perception – Regular Taste Test Average					
	Sweetness Rating	Sourness Rating	Bitterness/Blandness Rating	Strength/Intensity Rating	Flavor Guess	Descriptions
A	4.5	2.5	1.5	4.5	Watermelon	N/A
B	4	5	1.5	3.5	Lime (maybe Honeydew)	Felt cool and refreshing–
C	4.5	3.5	2	4	Grapefruit	N/A
D	3	5	2.5	5	Lemonade	Kind of tasted more sweet–
E	2	5	2	4	Lime	N/A
F	2.5	5	1	4.5	Blue Curaçao	Weirdly didn't taste like a blue flavor–
G	3	4	3	5	Lemon	N/A
H	4	2.5	1	4	Lemonade	N/A

Participant #3 (Mowa)

Drink Sample	Colour vs. Flavour Perception – Impression Test Average

	Sweetness Rating	Sourness Rating	Bitterness/Blandness Rating	Strength/Intensity Rating	Flavor Guess	Descriptions
A	5	2.5	1	4.5	Cherry	Looked really concentrated–
B	3.5	4.5	1.5	5	Lime	Really bright/concentrated–
C	3	1.5	3	2	Watermelon	N/A
D	3	1	3.5	3	Coke/Soda	Didn't look carbonated–
E	1	5	1	5	Citrus/Lemon	Looked somewhat acidic–
F	4	3.5	2	4.5	Blue Raspberry	N/A
G	2.5	3	2.5	3.5	Orange Juice	Looked most appealing/fruity–
H	1.5	2	4	1	Cream Soda	N/A

Drink Sample	Colour vs. Flavour Perception – Blind Taste Test Average					
	Sweetness Rating	Sourness Rating	Bitterness/Blandness Rating	Strength/Intensity Rating	Flavor Guess	Descriptions
A	2	3	1	2.5	Watermelon	N/A
B	1.5	2.5	1.5	3.5	Lemon	N/A
C	1	1.5	1	2	Lemon (ade)	Felt a little bit dilute–
D	1	2	2	2	Orange Juice	N/A
E	2.5	1	2.5	2.5	Mango	Tasted kinda bland but tangy–
F	3	3	2	1.5	Lemon	N/A
G	1.5	3.5	1	1	Lemon (ade)	N/A
H	2	1.5	2	3	Watermelon	N/A

Drink Sample	Colour vs. Flavour Perception – Regular Taste Test Average					
	Sweetness Rating	Sourness Rating	Bitterness/Blandness Rating	Strength/Intensity Rating	Flavor Guess	Descriptions
A	4.5	1.5	1	4.5	Strawberry	N/A

B	3	3.5	4	3	Lemon (ade)	N/A
C	3.5	2	1.5	4	Watermelon	Tasted the sweetest and had the best balance–
D	4	2	3	4.5	Cream Soda	Kind of tasted vanilla-y but flat–
E	4.5	1.5	1.5	2.5	Lemon	Came off a little bit too strong–
F	3.5	3	3	5	Blue Raspberry	N/A
G	3	2	1.5	3.5	Mango	N/A
H	2.5	3.5	4	2	Lemonade	Looked washed–out + cloudy–

Participant #4 (Mofe's Mom)

Drink Sample	Colour vs. Flavour Perception – Impression Test Average					
	Sweetness Rating	Sourness Rating	Bitterness/Blandness Rating	Strength/Intensity Rating	Flavor Guess	Descriptions
A	4.5	1.5	1	5	Strawberry	Looked really sugary–
B	3	3	2	3.5	Lime	N/A
C	5	1.5	1	4	Mint	Looked like medicine–
D	2	1	3	1.5	Vanilla	N/A
E	2.5	4.5	2	5	Lemon	Seemed way to bright–
F	4	2	1	3.5	Blue Raspberry	N/A
G	3.5	2.5	2	4	Mango	N/A
H	2	1.5	3	1	Lemon Water	N/A

Drink Sample	Colour vs. Flavour Perception – Blind Taste Test Average					
	Sweetness Rating	Sourness Rating	Bitterness/Blandness Rating	Strength/Intensity Rating	Flavor Guess	Descriptions

A	1	1.5	3	2.5	Flavored Water	Tasted watery but with a tang–
B	1.5	3	3.5	3	Lemonade	Had a distinct sour taste–
C	2	2.5	1.5	4.5	Watermelon	N/A
D	2	4	2	4	Watermelon	N/A
E	1.5	2	1	3	Kiwi	Very sour–
F	1	1.5	1.5	2	Coconut	N/A
G	3	3.5	2	2.5	Lemon	N/A
H	2	2	2.5	4	Lemonade	Very citrus–y taste–

Drink Sample	Colour vs. Flavour Perception – Regular Taste Test Average					
	Sweetness Rating	Sourness Rating	Bitterness/Blandness Rating	Strength/Intensity Rating	Flavor Guess	Descriptions
A	4.5	3	2	5	Strawberry	Tasted very sweet–
B	2	2	2	4	Lemonade	N/A
C	3	1	3	3	Watermelon	Had the best flavour–
D	4	2	2	3	Lemon	The color really threw things off–
E	1.5	4.5	2	5	Lemonade	Felt alarmingly sour for lemonade–
F	3.5	1.5	2	3	Pink Lemonade	Tasted kind of like blue–raspberry–
G	3	2	1	3	Orange Juice	N/A
H	2	3.5	3	2	Lemon Water	N/A

Participant #5 (Keira)

Drink Sample	Colour vs. Flavour Perception – Impression Test Average

	Sweetness Rating	Sourness Rating	Bitterness/Blandness Rating	Strength/Intensity Rating	Flavor Guess	Descriptions
A	4.5	2	1	2	Cherry	Kind of looked jolly-rancher flavored-
B	3	4	3	4	Green Apple	Same thing as above ^^-
C	3.5	1	2	4	Mouthwash/Mint	Looked kind of pale/sickening-
D	3.5	1	2	3	Coke	N/A
E	4	3	1	3	Lemonade	Very bright + acidic-looking-
F	4	1	1	4	Blue raspberry	N/A
G	3	3	1	4	Orange crush soda	N/A
H	1	1	1	1	Water	Very dilute looking-

Drink Sample	Colour vs. Flavour Perception – Blind Taste Test Average					
	Sweetness Rating	Sourness Rating	Bitterness/Blandness Rating	Strength/Intensity Rating	Flavor Guess	Descriptions
A	2	3	2	3	lemonade	
B	3	2.5	1.5	2	Blue raspberry	
C	2	3	1	2	Water with lemon	
D	3.5	3	2	2.5	Green apple	
E	3	2	1	3	coke	
F	1	3	2	3	water	
G	1	3	2.5	3.5	mint	
H	2	3	1	3	Lemonade	

Drink Sample	Colour vs. Flavour Perception – Regular Taste Test Average					
	Sweetness Rating	Sourness Rating	Bitterness/Blandness Rating	Strength/Intensity Rating	Flavor Guess	Descriptions

A	2	3	3	2	Strawberry	Kind of felt too sour–
B	1	2	2	1	Lemonade	N/A
C	2	1	3	3	Water	Tasted kind of tangy though–
D	3	2	2	3	Flat Coke?	Weirdly wasn't carbonated–
E	2	3	2	3	Citrus/Lemon Juice	Wasn't as bad as it looked; wouldn't have tried it if it wasn't necessary though–
F	2	1	2	3	Blue Gatorade	N/A
G	2	4	1	3	Orange Juice	Tasted refreshing–
H	2	2	3	2	Lemon Water	N/A

Participant #6 (Sophie)

Drink Sample	Colour vs. Flavour Perception – Impression Test Average					
	Sweetness Rating	Sourness Rating	Bitterness/Blandness Rating	Strength/Intensity Rating	Flavor Guess	Descriptions
A	3	2	1	4	Cherry	N/A
B	1	5	4	4	Lime	N/A
C	4	2	1.5	3	Bubblegum	Looked like it would taste really bad/sickening–
D	1	5	3.5	5	Coffee	There weren't any smell hints–
E	1	4.5	3	4	Lemon	N/A
F	4	4.5	2.5	3.5	Blue Raspberry	N/A
G	3	4	2	1	Orange	Looked really good–
H	1	4	4.5	2	Coconut	Very dilute/pale–

Drink Sample	Colour vs. Flavour Perception – Blind Taste Test Average

	Sweetness Rating	Sourness Rating	Bitterness/Blandness Rating	Strength/Intensity Rating	Flavor Guess	Descriptions
A	1	3	2.5	5	Strawberry	
B	2.5	4	1.5	4.5	Watermelon	
C	3.5	4.5	1	3	Lemonade	
D	4	3.5	2	4	Lime	
E	4	2.5	2.5	3.5	Pink Lemonade	
F	2.5	3	3	4	Orange Juice	
G	4.5	4	1	4.5	Lemonade	
H	3	5	2	3	Orange Juice	

Drink Sample	Colour vs. Flavour Perception – Regular Taste Test Average					
	Sweetness Rating	Sourness Rating	Bitterness/Blandness Rating	Strength/Intensity Rating	Flavor Guess	Descriptions
A	5	3.5	2	3.5	Cherry	
B	2.5	3	2	2.5	Lime	
C	3	2	1	1	Strawberry	
D	1.5	4	5	5	Lime	
E	2	3	4.5	4.5	Lemon	
F	2	3	2.5	4	Blue Raspberry	
G	3.5	2.5	2	3	Orange	
H	2	4.5	3	4	Coconut	

Participant #7 (Anya)

Drink Sample	Colour vs. Flavour Perception – Impression Test Average

	Sweetness Rating	Sourness Rating	Bitterness/Blandness Rating	Strength/Intensity Rating	Flavor Guess	Descriptions
A	4	1	3	4	Cherry	Looked the fruitiest–
B	5	1	2.5	5	Lemonade/Lime	N/A
C	3	2	1	4	Berry	Gave off medicine vibes–
D	2	2	3.5	4.5	Peanut Butter	The color was really weird–
E	2	4.5	2.5	1.5	Lemon	N/A
F	5	1	2	5	Blue Raspberry	Looked the most refreshing–
G	3	3.5	3	2.5	Orange (Juice)	N/A
H	4.5	2	5	1	Coconut	Kind of dilute–

Drink Sample	Colour vs. Flavour Perception – Blind Taste Test Average					
	Sweetness Rating	Sourness Rating	Bitterness/Blandness Rating	Strength/Intensity Rating	Flavor Guess	Descriptions
A	3.5	2.5	2	3.5	Lemonade	Tasted watery with tang–
B	4	2	2.5	4	Orange (Juice)	N/A
C	3	4	3	3.5	Lemonade	N/A
D	3.5	1.5	1	4	Strawberry	Kind of felt softer–
E	4	2	1.5	3.5	Lemonade	Tasted like the green one–
F	3	3.5	1	2.5	Mint Lemonade	N/A
G	2.5	4	1.5	4.5	Lemonade	N/A
H	3	2	2.5	2	Strawberry	N/A

Drink Sample	Colour vs. Flavour Perception – Regular Taste Test Average					
	Sweetness Rating	Sourness Rating	Bitterness/Blandness Rating	Strength/Intensity Rating	Flavor Guess	Descriptions
A	5	3.5	5	1	Strawberry	N/A

B	4.5	2	1.5	2.5	Lemonade	N/A
C	4	3	3	3	Strawberry	Had a really sweet flavour–
D	3	3	2	2	Lemon/Citrus	Kind of a confusing taste–
E	3.5	2	1	3.5	Mint Lemonade	Tasted nicest/yummiest–
F	3	4.5	2.5	4.5	Blue Raspberry	N/A
G	2.5	3	1.5	2.5	Lemonade	Tasted most sour–
H	2	2	5	1	Coconut Water	Tasted most dilute–

Participant #8 Eunice

Drink Sample	Colour vs. Flavour Perception – Impression Test Average					
	Sweetness Rating	Sourness Rating	Bitterness/Blandness Rating	Strength/Intensity Rating	Flavor Guess	Descriptions
A	4.5	3	1	3.5	Cherry	Looked the sweetest–
B	2.5	4.5	4.5	5	Citric	The green looked a bit alarming and bitter–
C	5	1	3	5	Strawberry	N/A
D	4	1.5	3	4.5	Coke	Didn't look very natural; but wasn't bubbly enough for soda–
E	1.5	5	4	5	Citrus Juice	The bright yellow made it seem kind of like it would be sour but also very bitter–
F	2.5	3.5	2	5	Blue Raspberry	Cool–
G	5	2	4	4	Orange Juice	Warm–
H	2	1	4	2	Lemonade	N/A

Drink Sample	Colour vs. Flavour Perception – Blind Taste Test Average					
	Sweetness Rating	Sourness Rating	Bitterness/Blandness Rating	Strength/Intensity Rating	Flavor Guess	Descriptions
A	1	2	1.5	3.5	Lemonade	N/A
B	1.5	3	2.5	4	Lemonade	N/A
C	3	2.5	1	2.5	Lime	N/A
D	2	1	2	3	Orange	N/A
E	2.5	3	3	3	Lime	N/A
F	3.5	2.5	2	2.5	Watermelon	N/A
G	1	3	3	3	Blue Raspberry	N/A
H	2	1.5	2	4.5	Iced tea	N/A

Drink Sample	Colour vs. Flavour Perception – Regular Taste Test Average					
	Sweetness Rating	Sourness Rating	Bitterness/Blandness Rating	Strength/Intensity Rating	Flavor Guess	Descriptions
A	3.5	1	1	2.5	Apple	N/A
B	4.5	3	3	3.5	Lime	N/A
C	4	2	3	4	Pink lemonade	Tasted really good; the best out of all of them–
D	2	3	2	3	(Lemon) Iced Tea	Tasted kind of lemon–y but sweeter than lemonade–
E	1	3	3.5	2	Lemonade	N/A
F	4	2	3	1.5	Blue Raspberry	Had a very refreshing taste–
G	1	3	3	2	Orange (Juice)	Kind of felt warmer–
H	2	1	3	2.5	Lemonade	N/A

Averages

Averages~

For each drink sample, the average sweetness, sourness, bitterness, and intensity ratings will be calculated before graphed. For flavour guess and descriptions, we will just be collecting the most commonly guessed flavours and the most commonly used terms for description in the graphs.

Drink Sample	Colour vs. Flavour Perception – Impression Test Average					
	Sweetness Rating	Sourness Rating	Bitterness/Blandness Rating	Strength/Intensity Rating	Flavor Guess	Descriptions
A	4.3	2.3	1.4	4.0	Cherry	Sweetest–looking; great fruit flavor
B	3.1	3.7	3.0	4.1	Lime	Sweet–sour mix
C	3.2	1.4	2.9	3.8	Mint	Medicinal/bland; bitterly sweet
D	3.2	2.0	3	3.6	Soda (Coke)	Unusual color; gave off vanilla/sugar cane vibes
E	2.3	4.5	2.2	3.9	Lemon	Way too bright/acidic
F	4.1	2.6	1.8	4.3	Blue Raspberry	Looked like a colder drink
G	3.6	3.1	2.3	3.3	Orange (Juice)	Great color; tangy/fruity
H	2.1	2.1	3.5	1.5	Coconut	Dilute/bland; watery

Drink Sample	Colour vs. Flavour Perception – Blind Taste Test Average					
	Sweetness Rating	Sourness Rating	Bitterness/Blandness Rating	Strength/Intensity Rating	Flavor Guess	Descriptions
A	2.1	2.7	1.9	3.3	Lemon (ade)	N/A
B	2.6	3.1	1.9	3.4	Orange	N/A
C	2.8	2.9	1.4	3.1	Lime	N/A
D	2.8	2.9	1.6	3.5	Mango	N/A
E	3.1	2.5	1.8	3.3	Lemon	N/A

F	2.4	3.1	1.7	3.1	Lemon (ade)	N/A
G	2.5	3.5	1.8	3.5	Lime	N/A
H	2.7	2.7	2.1	3.4	Watermelon	N/A

Drink Sample	Colour vs. Flavour Perception – Regular Taste Test Average					
	Sweetness Rating	Sourness Rating	Bitterness/Blandness Rating	Strength/Intensity Rating	Flavor Guess	Descriptions
A	4.4	2.6	2.0	3.9	Strawberry	Really fruity and sugary; #2 Ranked Flavour
B	3.4	3.3	2.2	3.3	Lime	Great sour and sweet balance; #6 Ranked Flavour
C	3.6	2.2	2.3	3.4	Watermelon (Lemonade)	Tasted very different than expected – it was the perfect mix of sweet and sour; #1 Ranked Flavour!
D	3.2	2.9	2.6	3.7	Cream Soda	So sweet it tasted bitter; #8 Ranked Flavour
E	2.1	3.1	2.4	3.7	Lemonade	Wasn't as bad as it seemed, way too sour; #7 Ranked Flavour
F	3.1	2.6	2.2	3.7	Blue Raspberry	Felt very cool and refreshing; #5 Ranked Flavour
G	2.9	3.1	1.8	3.2	Orange (Juice)	Had a tropical/warm vibe to it; #3 Ranked Flavour
H	2.6	2.6	3.3	2.6	Coconut Water	Bland but also sweet; #4 Ranked Flavour

Observations

Experiments 1 & 2: Callista and Sophia L

this was the experiment where we messed up by doing the blind taste test first!

- Experiment #1: Callista and Mofe
    - On the first test, it was hard for the participant to pin down how sweet or sour they felt it would be, as the ideal drink is meant to have a good balance between the two
        - In addition, most of this participant's flavour guesses didn't really match the ratings for each aspect, and they felt a little bit far-fetched
    - For the blind taste test, this participant almost immediately guessed each and every flavour, easily figuring out that they were all the same drink, lemonade
        - Because of that, the regular taste test (with eyes open) was redundant and we weren't able to get proper data

change the order of tests!!!

- Experiment #2: Sophia L and Aspen
    - This participant's flavour guesses on the impression test had a wide range, and were pretty outgoing guesses
- For the blind taste test, this participant only got Lime, Orange, or Lemon (ade), and they guessed the reality of the test pretty quickly
    - This then altered the regular taste tests results
- Something unique about this participant's flavour guesses were their Honeydew and Blue Curaçao guesses because those are both flavours more common in Caribbean areas

Experiments 3 & 4: Mowa and Nola (Mofe's Mom)

- Experiment #3: Mowa and Mofe
    - Things generally went a lot better with this participant now that we had altered the order of the tests, putting the regular taste test before the blind one
    - This participant generally didn't like the darker colored drinks (red, green, blue) and rated them a bit lower on their favorites list for the regular taste test
    - In the blind taste test, the participant was mainly guessing orange, watermelon, or lime-based flavours, and they were confused whether or not they were tasting the same drink
- Experiment #4: Nola (Mofe's Mom) and Mofe

- Very similar to the results of the last one, as this participant overheard the first's experiment
- In the impression test, the flavours had a very wide category, some from cold drinks, juices, hot/warm drinks, etc.
    - For the regular test however, the taste of the lemonade's sweet/sourness made the participant stick to fruity flavours that you could see in juices

Experiments 5 & 6: Sophia Y and Keira

- Experiment #5: Sophia Y and Mofe
    - This experiment was definitely a little bit rushed
    - During the impression test, this participant found it hard to make guesses due to the fact that there was no obvious smell; they really didn't want to taste the pink (C) or brown (D) drinks
- Experiment #6: Keira and Aspen
    - Compared most of the flavours to jolly rancher flavours, expecting most of them to be sweet

Experiments 7 & 8: Anya and Eunice

- Experiment #7: Anya and Mofe
    - Said that the yellow coloured drink tasted the best
- Experiment #8: Eunice and Aspen
    - This participant rated the pink coloured drink the highest, and mentioned that it was the best one

A (Red): This drink had the highest sweetness rating, and many thought that its vibrant red color gave it a sugary and fruity taste.
B (Green): Many believed that this one had a very good sweet and sour mix, kind of like the yellow one, but a lot better.
C (Pink): During the impression test, a lot of people thought that it would taste like sickening minty medicine, but after tasting it, this became the #1 most liked drink amongst the participants because of its fruity sweetness with a touch of sour.
D (Brown): Since many believed that it was a soda/sugar cane drink originally, many thought that it tasted so sweet that it began to be a bit bitter.
E (Yellow): Though all of the participants didn't want to try it at first due to its "highliter" color, many guessed this one to be purposely dyed lemonade, but still felt it was a little too sour.

F (Blue): Some participants mentioned how this drink seemed to be colder, and all of them liked the refreshment it brought.
G (Orange): Most participants really like the color of this one, as they believed that it was tangy, tropical, and "warm."
H (Clear): Many thought that this drink seemed kind of "bland" or "dilute," but still liked the faint sweetness it had

Drink Overall Rankings~

Based on the tested aspects and flavour!

#1: Pink (Sample C)

#2: Red (Sample A)

#3: Orange (Sample G)

#4: Clear/Uncolored (Sample H)

#5: Blue (Sample F)

#6: Green (Sample B)

#7: Yellow (Sample E)

#8: Brown (Sample D)

Sources of Error:

- In our first two experiments, we started with the impression test, then went on to the blind taste test, and conducted the regular taste test last. Because we did that, the participants got pretty close to figuring out the reality of the drinks, and it messed up their answers on the regular taste test because they had already tasted them all as the same or very, *very,* similar. For the remaining experiments, we had to switch the blind test and the regular test, but we unfortunately were unable to get any more participants at that point.

- In the first 2 sets of experiments (#1, #2, #3, and #4) we had poured large amounts of lemonade and dyed them just like that, which eventually caused us two problems, firstly we would run out of lemonade way too fast. If we had continued at that rate, we would have had to buy lots more of the lemonade. Along with that, the participants were able to guess that it was all lemonade, even on the regular taste test, because the flavour of the drink was too strong and distinct for them to ignore. To solve both of those problems, we ended up diluting the lemonade with small amounts of water (about 4–5 regular plastic bottle caps) to the plastic cups before we would pour in a small portion of the lemonade. This way, the flavour wasn't too overwhelming for the participants, and we would use up the lemonade a lot slower.

- For 3 of the colors that we mixed, we didn't have a very efficient way of stirring them into the cups of lemonade. For the pink sample, the color was way too strong if we put in a whole drop, and it started to show up as a salmon–red color instead. To avoid that, we had to rub a very small speck on a spoon, and quickly mix it into the mix before it partially dried up. For brown and orange, however, we weren't able to get singular bottles in those colors, so we had to mix them up by ourselves. Because these 3 colors had little problems, we would sometimes end up with slightly different colorings for each participant, though it shouldn't have been enough to extremely alter the results.

- Since we didn't have a pulp strainer, the pulp from the Simply Lemonade was obvious in the drink and in the participants mouth, which could have brought them closer to finding out that it was lemonade the whole time.

- We started the experiment a little bit too late, so we weren't able to get a good amount of people, as we also weren't able to get a variety of people to participate (varied age, varied gender, varied ethnicities, etc.)

However, these errors that we made in our experiment were mainly due to our rush to finish and our lack of planning before we got into the experiments. With more time and in future attempts, these could easily be avoided.

Graphs + Analysis

For our graphs, we will be using the letter names of the drinks to show how they related to sweetness, sourness, etc. Here is a copy of the key that we used during our experiment:

a = red
b = green
c = pink
d = brown
e = yellow
f = blue
g = orange
h = clear/uncolored

In addition, to get a good understanding of what the numbers mean here is how me and my partner took the ratings into consideration.

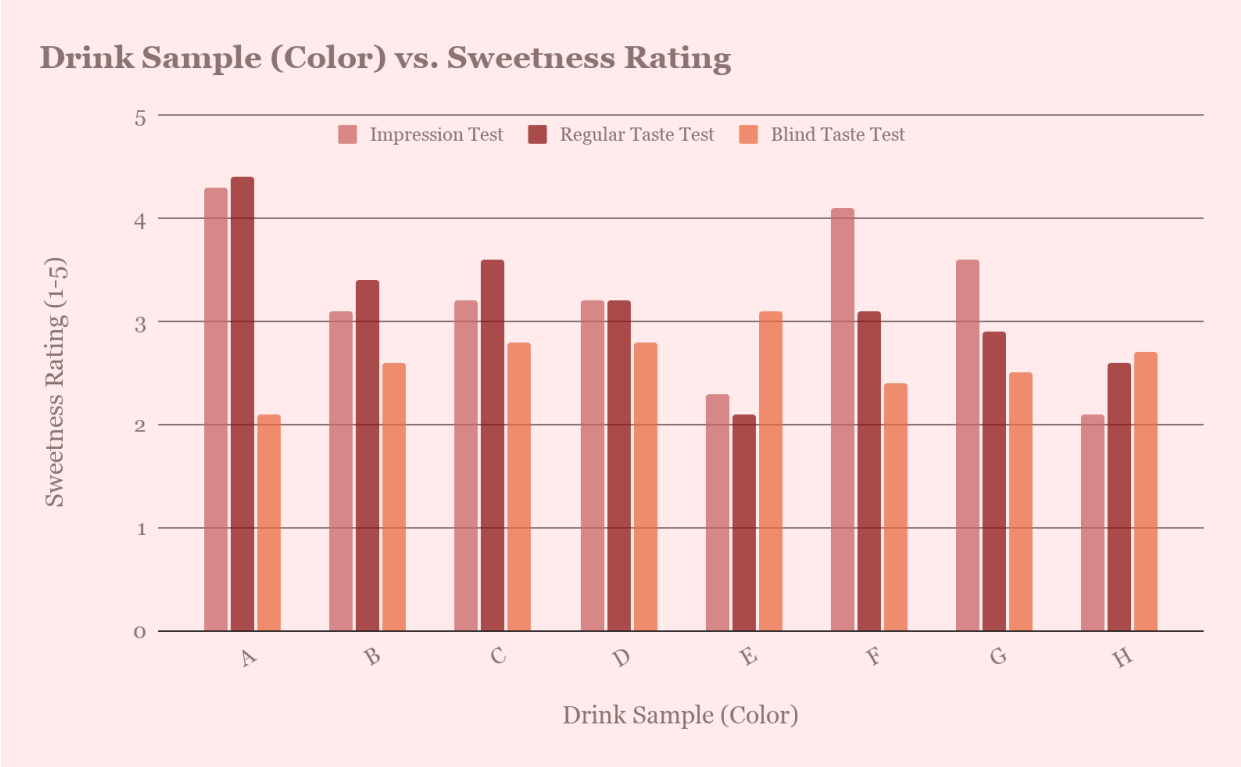
1–1.5 = Very low, unlikable due to that trait.
1.5–2.5 = Low–average, doesn't contribute to opinion too much.
2.5–3 = Pretty high/good, was a recognizable trait that distinguished the flavour.
3.5–4.5 = Very high, this trait of the drink contributed a lot to the opinion and perception of the flavour.
4.5+ = Extremely high; overrules most other factors and could possibly even be too much.

Before doing the experiments, we also showed the participants the ratings description to let them know what their ratings would mean for our outcome.

Graphs (4):

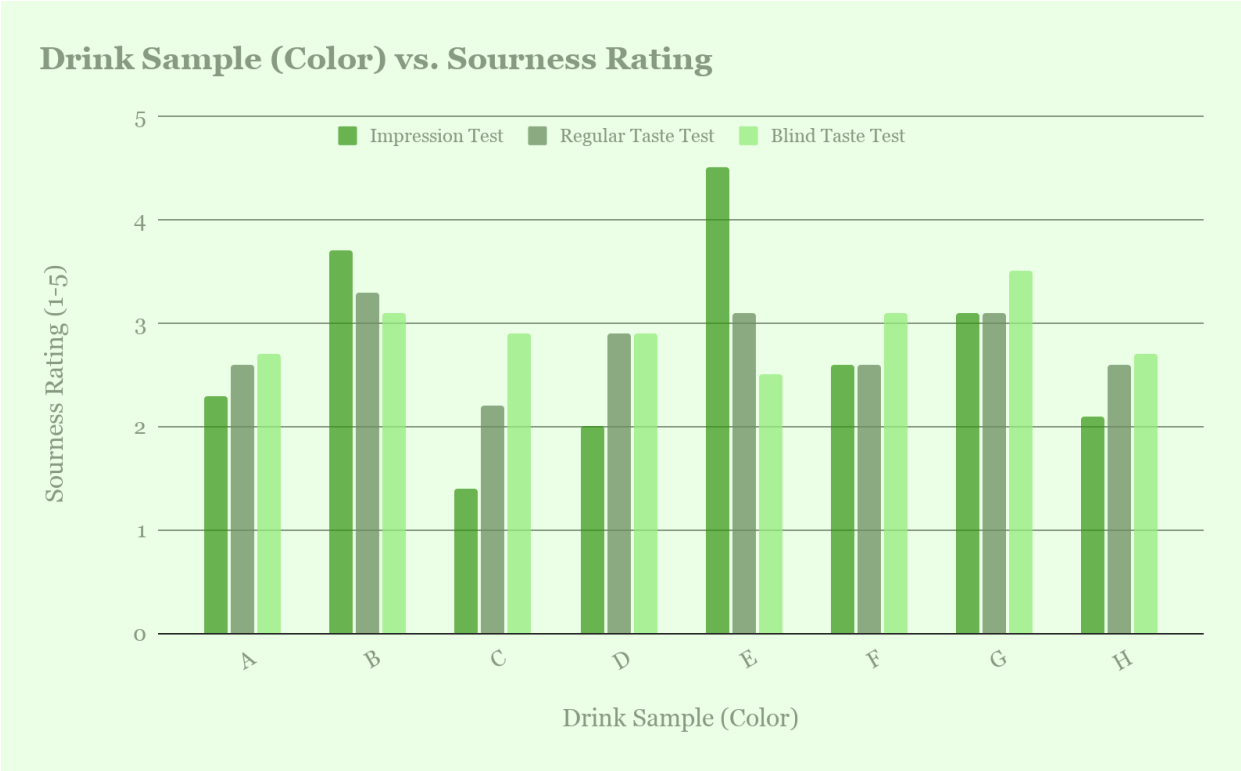
To save space and present our information in the best way possible, we will have 4 graphs that compare the letter (color) of the drink to each of one of the specific aspects that we tested (sweetness, sourness, blandness, intensity). In each graph, each letter will have 3 bars coming up from it, representing the difference between the impression, the actual tasting, and the blind tasting. Though we did have a flavour guess column, we will only be able to have a graph for the 4 numerical aspects tested, as a graph cannot portray our word values. For descriptions and flavour guesses, we will create a simplified version of the data tables to show our findings.

Graph #1 – Color vs. Sweetness



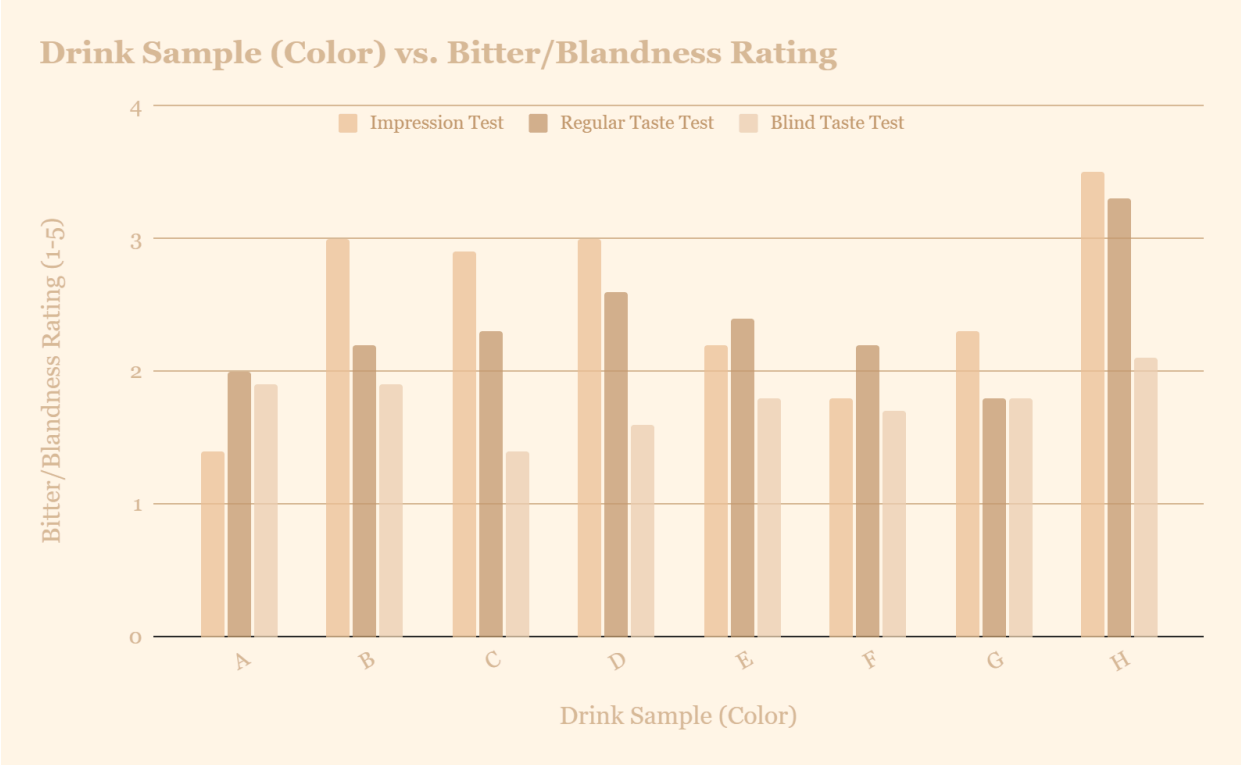
From this graph, we can see that most of the drinks were expected to be pretty sweet, as most drinks show up sweet in real life. Some drinks with lower expectations for sweetness were Sample E (Yellow) due to its intense saturation, and Sample H (Clear) due to its pale color and diluted look. In the regular test, there is a much more obvious difference between the sweetness ratings, as colors like red, pink, and orange scored quite high, and blue, green, and especially yellow dipped down a bit. In the blind taste test, however, most of the numbers were pretty similar, and, ironically, Sample A (Red), which originally scored the highest, got the lowest overall sweetness score.

Graph #2 – Color vs. Sourness



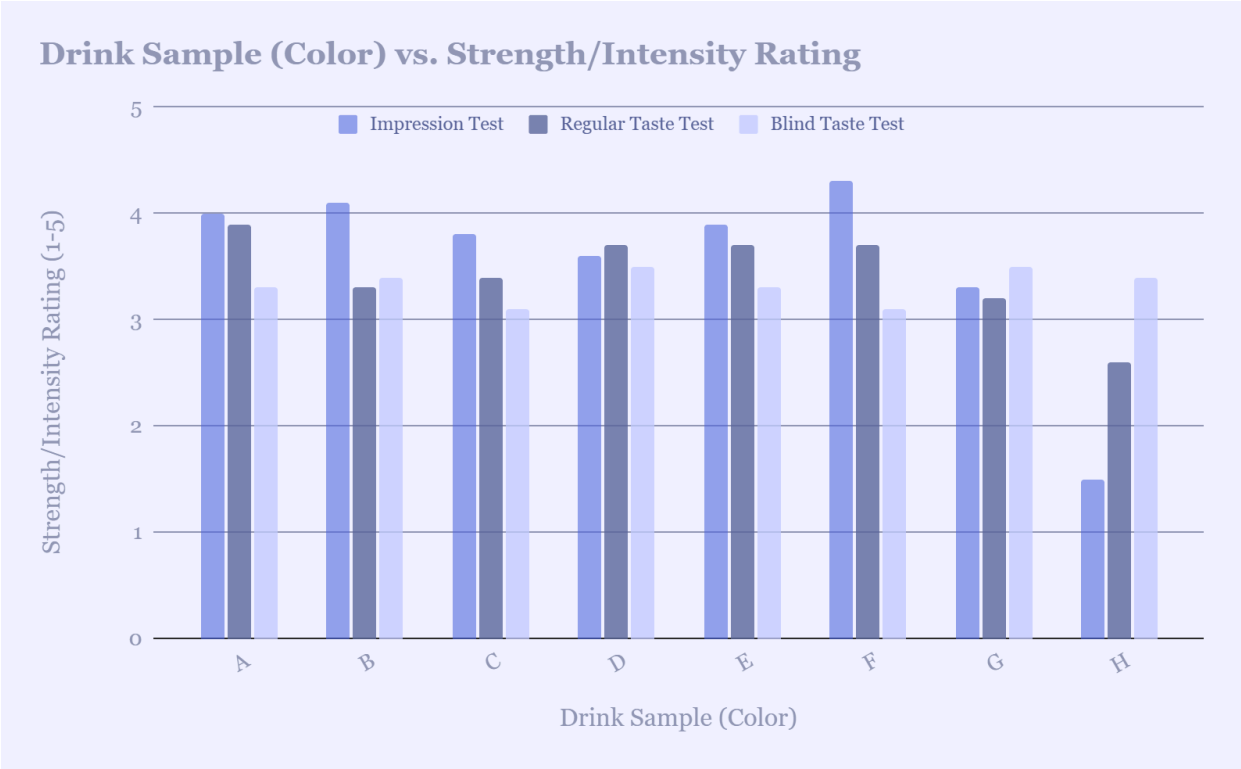
In this graph, we can see a much greater difference between the ratings. We believe that this is the case because most drinks have some sort of sweetness to appeal to consumers, but only specific drinks have a sour attribute, distinguishing them from more common drinks. In the impression test we can see that the sourness ratings portray basically the opposite of what that drink got in its sweetness rating. For example, Sample A (Red) got a high rating in sweetness, but a quite low rating in sourness. On the other hand, Sample E (Yellow) got a very low rating in sweetness, but it got an obviously high rating in presumed sourness. In the regular taste test, the ratings stayed pretty similar, and they all generally met in the middle. We believe that it is because the participants didn't really realize before that all drinks have an element of sourness in it. One significantly obvious drop was in Sample E (Yellow), as the participants tended to realize that it wasn't as bad as they expected it to be. However, it still had one of the highest regular taste test ratings. Lastly, for the blind taste test, similar to the sweetness factor, all of the ratings were fairly similar, some being drawn up or down by a few outliers. The sweetness and sourness ratings in the blind taste test were fairly similar, because lemonade (as the participants somewhat figured out it was) is known for its natural balance of sweetness and sourness.

Graph #3 – Color vs. Bitter/Blandness



Out of all the aspects we tested, the hardest thing for our participants to pick on was bitter/blandness, because colors so brightly colored weren't really expected to be bland. However, we still got quite good results in this category. In the graph, you can see that there is a half and half split between very bitter and not bitter at all in the impression test. For Sample A (Red), Sample E (Yellow), Sample F (Blue), and Sample G (Orange), the participants didn't expect them to taste very bitter or bland at all. For all the other samples, however, especially Sample H (Clear), the participants thought that their colors made them subject to being bland. In the regular taste test, the numbers for the latter dropped, as they realized that their side of the color wheel didn't affect the blandness too much. However, for Sample D (Brown) and Sample H (Clear), the participants seemed to see those as bland all the way through. In the blind taste test, the blandness/bitterness ratings stayed pretty low, as they weren't focusing on what they thought based on the color.

Graph #4 – Color vs. Strength/Intensity



Lastly, when calculating the strength and intensity ratings, you can see that they stayed pretty high all the way through. In the impression test, all of the drinks were expected to taste pretty strong, except for Sample H (Clear), because it was the palest and the most dilute-looking. Out of all the drinks, Sample B (Green) and Sample F (Blue), were expected to have the highest intensity, and we noticed that they are relatively close on the color wheel. In the regular taste test, the strength ratings stayed generally the same, going down a bit as the participants had quite wild guesses for some of them. For Sample H (Clear), though it still stayed low, the rating went up a bit overall. In the blind taste test, like all of the other aspects we tested, the ratings stayed pretty similar, all in a range from 3 – 3.5.

Color vs. Flavour Guess			
Drink Sample	**Impression Test**	**Regular Taste Test**	**Blind Taste Test**
A	Cherry	Strawberry	Lemon (ade)
B	Lime	Lime	Orange
C	Mint	Watermelon (Lemonade)	Lime

D	Soda (Coke)	Cream Soda	Mango
E	Lemon	Lemonade	Lemon
F	Blue Raspberry	Blue Raspberry	Lemon (ade)
G	Orange (Juice)	Orange (Juice)	Lime
H	Coconut	Coconut Water	Watermelon

Results and Conclusion

Results:
Overall, our experiment has very promising results that show significant changes between each drink's average rating, even though the only thing that was changed was the color.

In general, the "first impression" test allowed us to see what colors came off as most appealing. Because the participants wouldn't actually know about the taste of the drink, since there weren't any smells to lead them with, all of their ratings and flavour guesses were based on biases and opinions that we hoped would allow us to identify what came off first as most appealing. In that test, we mainly looked at the participants' reactions and preferences, because it showed us what they unconsciously were first attracted to. Overall, the participants were most attracted to Sample A (Red), Sample F (Blue) and Sample G (Orange), because those colors are known for being common, sweet drinks, which the participants tended to attract. These first impressions were helpful for us to know which colors are most favored at first glance.

The "regular" taste test that we conducted was to let us understand the second part of our question, if color can influence what a person thinks about a drink's taste. We also wanted to know if the color could *overrule* what the person's tongue actually tastes, manipulating their brain into thinking that it is something else. Luckily, this part of the experiment was also very helpful in understanding exactly *how* color could play a role in a person's perception of a taste. In our experiment, the difference between the impression test was quite little, which proves exactly what we hoped. Because the answers had very little difference, it shows that what the participants expected their drink to taste like ultimately influenced their belief of their drink's flavour. In a few drinks, there were generally higher fluctuations between the numbers, but most of the drinks had similar ratings between the impression and the actual taste, in all categories that we tested.

Lastly, our "blind" taste test was technically the base of the experiment, as it proved that all of our information from the regular taste test was valid and actually making a difference. In our blind taste test, many of the participants were trying very hard to differentiate between the flavours, and they found it even harder to differentiate between the ratings for each drink. Many participants even asked if we were just giving them the same drink over and over. Due to the confusion and the stress that they had trying to decide their guesses and ratings, we can prove that their ability to see the color

of the drink was what influenced their decisions and flavour guesses, therefore proving that color does affect the brain's perception of taste.

Conclusion:

In conclusion, the color of a drink, or any food really, *does* in fact change a person's perception of the flavour and the taste, as proved by the data. Overall, this fact supports the hypothesis for this experiment, that the color of a drink will affect how each person tastes it, causing them to like specific "flavours" over others. Each time a participant tasted a "new drink," they had new opinions, new ratings, and new reactions. Because we only changed the color of the drink, the differences that we saw in our chart quite obviously prove that color affects taste, and it is one of the leading factors in that.

However, though our hypothesis was right on the main part, it was partially wrong for the second half where we predicted what participants would generally feel about the colors. We predicted that red, pink, brown, and orange would be some of the top rated "flavours," and people would describe them as tropical, sweet, and vibrant. We also believed that participants would be most attracted to these colors from the very start. Though pink, red, and orange were actually in the top three, respectively, brown was actually ranked last *because* of that sugariness that we believed it would give off. Many thought that sugar was so much that it turned bitter, eventually putting it in last place.

For green, blue, yellow, and clear, we were a little more wrong with hypotheses on how participants would react to them. We believed that blue, yellow, and clear would be loved and closely tied with the warmer colors, expecting that the unattractive color of the clear drink would cause it to come in last. However, the clear drink actually came in the top 50%, ranking 4th place. We believe that this is because the cloudiness could have represented a presence of sugary substances, causing participants to enjoy it above the other highly-saturated drinks on the cooler side. In addition, green and blue came in very close with each other, being described as colder and more refreshing. Yellow, however, due to its acidic-looking color and high saturation, was almost placed in last, barely making it above brown. That information tells us a lot about how colors can affect opinions in taste, along with the information that is within our experiment's three tests.

The "first impression" test helped us with the first thing we wanted to know – which colors appeared most appetizing in drinks. This knowledge would eventually help us figure out what colors would be best in marketing and advertising, as colors have a

simpler yet wider range that could easily apply to marketing tactics. Based on our results from the “first impression” test, we can see that red is the #1 color to use when trying to attract people’s attention, especially when the product is advertising its sweetness. Light oranges and off-whites would also be good, as those two colors were ranked high because of their dull sweetness that was compatible with its sourness. Pink, however, could be a questionable color, as, on first glance in our test, many reacted badly to the pink as it appeared to be medicinal or overly minty.

Green, blue, and less-saturated yellows are also appetizing to most , being eye-catching but appealing, without coming off too strong. Those three colors are known to be most common in sweet and fruity drinks, which could generally draw people towards them. Lastly, brown is probably the least suggested color for use, especially when considering basic drinks, as it was the least attractive drink in our experiment. While the participants still guessed tasty flavours, they were undoubtedly uncertain about whether they were willing to risk trying it.

We also were able to see what colors were more desirable, as the colors ranked the highest were usually consumed the fastest, and with the most zeal. Along with that, we watched the reactions of the participants when they consumed each drink, and we noticed that yellow, brown, and green got slightly bad reactions, including squinting and cringing, indicating that the participants weren’t happy with the taste. However, for the higher ranked colors, especially pink and red, the participants took bigger sips and licked their lips after, showing that they favored those tastes and would be willing to drink the whole cup.

Together with the "impression" test, the “regular” taste test also showed us whether or not the color of a drink could affect somebody’s opinion and perception of its taste long term. In other words, we wanted to know if their opinion would last the whole experiment based on what they said in the impression test. For most drinks, the participants did have similar opinions between the impression test and the regular test, showing that their opinion lasted throughout the whole time. Some exceptions were the clear drink, the yellow drink, and especially the pink drink. For the clear drink, participants expected it to be pretty tasteless, and though they still found it a little blander than the others after tasting, they admitted that it was actually one of the best drinks; for the yellow drink, participants expected it to be way too strong, but, while they still found it a little bit too sour and strong, they realized that it wasn’t as bad. For the pink drink, most people were planning on having to rate it last, as many were worried it would taste like

medicine. However, when they tasted it, they, ironically, ranked it as the best drink in the whole set.

Together, all of this information concludes that color affects how a person perceives a drink's taste in multiple aspects and categories.

Application

Application:
How is this information helpful? Why would anybody care? Well, aside from the fact that this information is cool, psychological, and interesting, this information can actually help people in the real world. In everyday life, the information that we acquired from our experiment could help people in food and possibly even other marketing and promotion of products, even if they aren't drinks. Because drinks have a wide yet simple variety of flavours they could be associated with, they are the best way to apply colors and opinions to marketing and all sorts of advertising.

Based on our findings in the impression test and even a little bit of the regular taste test, we can conclude a few things about what colours would be the most effective for specifically food marketing, which also could vary based on the purpose.

Red ~ Based on our impression test, it is obvious that red is the #1 best color to use in marketing, especially when the product is meant to advertise sweetness or fruitiness. Red attracts people's attention in the best way possible, as it appears to be vibrant, sweet, and fruity due to its warm red tones. Using red for boxing or significant images in marketing would cause people to pay attention to it and be more willing to try the product and buy it.

Orange ~ As seen in our impression test and in our taste test, we can tell that orange is also another amazing color to use in food marketing, as this color, again symbolizes fruitiness and freshness. In addition, as a warm color, orange also indicates a tropical and potentially sour flavour, which is one of the most appealing tastes there is, as shown in our regular taste test. Because orange, no matter what shade, also has a very bright and appealing color, it would draw attention to it, which would therefore make it a good choice for effective marketing.

Yellow + Off-white ~ As shown in our impression test, yellow is one of the most horrible colors to use for marketing purposes, especially if it has a high saturation. Because of the highlighter-yellow color that we achieved from the food dye, our participants thought it looked the worst, expecting it to be the most sour, even though it was the same as all the others. Instead of that bright yellow, people promoting their products should use paler yellows or off-whites instead, as, even though they can come off as bland, they would be more effective for marketing purposes due to their possibility to be viewed as light and sweet. In general, however, yellow should be avoided when trying to market food products.

Green + Blue ~ When marketing sour or intense/strong foods and drinks, green and blue, to the right extent, could be some of the best colors possible for that purpose. These colors, while having decent sweet ratings, scored generally high in intensity and sourness. Because of that information, we can conclude that those colors tend to show up as vibrant, refreshing, and a little bit tangy. By using the right shades and the right saturation of green and blue, promotion and marketing with those colors would attract consumers to the color and the taste that they are craving to get from them.

Pink ~ If we look at the impression test and the regular taste test's final results, pink becomes the most difficult color to deal with in marketing. In the impression test, pink scored quite low in both sweetness and sourness, but it had pretty high scores in blandness and intensity. Because many expected it to taste like medicine, they got that combo of high blandness and intensity, which generally indicates a bad presumed taste. However, once they had tasted the pink drink, they believed it was the tastiest drink of them all, and it was rated as perfectly sweet, sour, and intense. However, in real-life marketing, many people wouldn't be willing to take that risk, because they aren't forced and it may not be worth it. So, if pink should be used in marketing, then we believe it would be best if the pink was darkened a little bit, or was given a red undertone. With any of those adjustments, the pink would have similar traits to the red, attracting buyers due to the sweetness and sugary fruitiness that it brings along.

Brown ~ In our experiment, the participants had doubts about the brown color the whole time. In the impression test, though a few tried to give it some hope, many gave it low ratings in sweetness and sourness as the color was unusual and unappealing. Even when the participants tasted the brown drink, many thought it was overly sweet in a way that eventually made it taste bad in their mouth. Because lemonade isn't bitter in any way, those comments and reactions show that the color of the drink threw them off a lot, proving that brown is an unappealing but influencing color. Therefore, in marketing, brown should only be used if it is a paler or lighter shade, which could bring forth vibes of cinnamon or vanilla, which would draw consumers with its comforting vibe. However, brown should generally be avoided in marketing and packaging strategies.

A good example of how the conclusion from this experiment is used in real-life marketing and promotion is with the brand Coca Cola. Even though the drink itself is brown, which could come off as bitter or unappealing, they use a bright, vibrant red

packaging to appeal to the eyes, and somewhat "cancel out" the effect that the brown drink could have on consumers.

Overall, because our experiment was based on 8-ish main colors that are seen in everyday life's foods and drinks, that means that our experiment and the analysis above could be valuable information on how to effectively market according to people's preferences based on how color affects a person's perception of tastes and flavours.

If we were to study further in this topic, we would make a second part, where we could investigate how specific *intensities* and *saturations* affect people's perception of flavours, expanding the way that marketing could use colors to link to flavours.

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Logbook

November 6, 2025 – Day 2 Science Fair

- General Project Information
    - Question, Variables, etc.
    - Got thinking about background research and our own knowledge of topic

November 18, 2025 – Day 2 Science Fair

- Background Research progress (read the articles and did a bit of summary)
- Couldn't pair our projects for CYSF? (ask Rena on day 5)

by next entry

- Do CYSF Step #1
    - Join together as a pair
- Get Info on how to do CYSF Step #3
    - Start the Basics
- FINISH UP BACKGROUND RESEARCH

November 19, 2025 – Wednesday Personal Work (Mofe)

- Finished summarizing source number 1
- Summarized source number 2
- Started reading source number 3

November 20, 2025 – Personal Work (Mofe)

- Browsed through former gold and silver projects
    - Got inspo for logbook and project format
        - Got and idea to refine question: discuss with aspen on day 5

November 21, 2025 – Day 5 Private Science Fair w/ Rena

- More background research
    - Got Rena to help with some
- Created a more in-depth Logbook (added folders, etc.)
- Copied in all our procedure notes

by next entry

- finish/wrap up background research so that we can pay attention to the experiment

November 26, 2025 – Day 2 Science Fair

- Project proposal – Background research
    - Read articles and found all the necessary sources of information

by next entry

- finish/wrap up background research so that we can pay attention to the experiment

December 1, 2025 – Day 5 Private Science Fair w/ Rena

- Filled in some of the holes in our background research
- Found a few more websites to deepen our understanding
- Made sure to have all the necessary requirements for our research
- Started drafting steps in our procedure

by next entry

- Finalize all background research
- Get a better idea of our procedure
- Start thinking about ethics

December 4, 2025 – Day 2 Science Fair

- Couldn't make it ;(

by next entry

- Finalize all background research
- Start experiment procedure plan
- *GET ETHICS DONE!*

December 9, 2025 – Day 5 Private Science Fair w/ Rena

- Discussed ethics and project procedure (where, when, how, etc.)
- Started filling out the ethics form

by next entry

- Finish all of the background research (only 2 sources left)
- Finish ethics by *THIS FRIDAY*
- Work on drafting up a small form for volunteers
    - Start volunteer inquiries

January 8, 2026 – Day 5 Private Science Fair w/ Rena

- Added specific details to our materials list + modified the procedure
- Specified which volunteers we would have
- Split up what things each person would buy
    - Prepared portions and divisions

by next entry

- Finish all of the background research (only 2 sources left)
- Finish ethics by *THIS FRIDAY*
- Work on drafting up a small form for volunteers
    - Start volunteer inquiries

January 10, 2026 – Personal Work (Mofe and Aspen)

- Brainstormed more ideas for background research and hypothesis
- Refined hypothesis and procedure (added a pre-procedure step)
- Defined variables and procedure/materials

by next entry

- Finish all of the background research (only 2 sources left)
- Finish ethics by *THIS FRIDAY*
- Work on drafting up a small form for volunteers
    - Start volunteer inquiries

January 26, 2026 – Personal Work (Mofe)

- Touched up some missing areas on the document
- Added in a bit of our ethics reasoning
- Brainstormed more ideas for the experiments
- Found some extra resources for our background research

by next entry

- Get on track with all the parts of the SF agenda
- Figure out whether or not we are using a trifold

January 31, 2026 – Personal Work (Mofe)

- Finalized and refined experiment information and procedure
- Created surveys and formulated a plan of action for each experimentation session
- Viewed some CYSF past projects for organization ideas + tips

by next entry

- Figure out data collection and graphing
- Get the whole thing finalized and get supplies for the experiments

February 2, 2026 – Personal Work (Mofe)

- Finalized how were were going to collect data and graph the data
- Refined procedure, steps, materials, and everything to get ready for our first experiments on Tuesday and Wednesday

- Bought all of the materials needed and made a plan for how we were going to run each session

by next entry

- Go over ideas with Rena; let her know our plan for the experiments
- Communicate with all the participants and let them know their schedules
- Get ready for our first experiments and find a good way to multitask
- Start formatting our bibliography in spare time

February 3, 2026 – Day 5 Private Science Fair w/ Rena

- Shared our procedure and experiment schedule with Rena and got feedback
- Discussed the plan for the next day's experiments together and got all the materials collected
- Went over the procedure and rearranged it
- Planned methods of collecting data and graphing it
- Created the project schedule

by next entry

- Get halfway or more through all of our experiments
- Collect all current data and interpret it
- Start recording noticed trends and important observations
- Possibly share our information with others and ask them about it

February 4, 2026 – Personal Work (Mofe and Aspen)

- Conducted the first experiments
    - Callista (#1) and Sophia L (#2)
- Recorded all data
- Planned on how to revise and fix things in our next experiments

by next entry

- Hopefully do more experiments?
- Start recording noticed trends and start thinking up analysis based on some key observations
- *share information??*

February 6, 2026 – Day 2 Science Fair

- Refined our procedure based on observations from the last experiments
- Redid the schedule as few of our participants had to drop out
- *minor setback*

by next entry

- Continue the experiments and think about outcome!

February 7, 8 2026 – Personal Work (Mofe)

- Did experiments for participants #3 and #4
    - Recorded data, and also noted key observations
- Didn't put them into the data table until later...

by next entry

- Get done with the second last 2 experiments and get ready to wrap up
- Start thinking about our findings, and what they support
    - Think up ideas for forming analysis, conclusion, application, etc.
- **Find a good way to calculate averages!!!**

February 10, 2026 – Personal Work (Mofe and Aspen)

- Conducted experiments #5 and #6 as planned
    - Went well, but we were a little rushed
- Took a little "overview" of our experiment to get a good understanding of how things were going and how it would play into our results and conclusions

by next entry

- Finish the last experiments!!

February 11, 2026 – Day 5 Private Science Fair w/ Rena

- Because we had 4 or 5 people drop out, today we conducted the last experiments of our set!
- We not only recorded the results, but we also paid attention to behaviours, reactions, and any small details that could play a role in our observations and analysis

by next entry

- Start recording all of the averages
- ***figure out a plan on how to graph!!***
- Think about how all of this information forms our conclusion

February 22, 2026 – Personal Work (Mofe)

- Finished entering all the participant data
- Started our bibliography
- *procrastinated way too much*

by next entry

- Get on task with Rena's agenda

February 25, 2026 – Personal Work (Mofe and Aspen)

- *we had both been away from the work for a while because of heavy schoolwork so we had to put in lots of work and teamwork to accomplish this all*
- Started calculating averages and analysing our data
- We also recorded all of the key observations and formatted them in a way to state which colors were associated with what

by next entry

- Create all of the graphs and make a paragraph of analysis for each one
- Start recording all of the results
- Begin to form a conclusion and figure out how it can be applied in real life

February 27, 2026 – Personal Work (Mofe and Aspen)

- Created all of the graphs on google sheets and imported them into our logbook
    - Also made the corresponding analysis paragraphs
- Imported all of our previously-taken observations from the experiments
    - Arranged the key observations into charts and tables to understand how each color was associated with certain attributes
- Wrote down all of the results and what they meant

by next entry

- Finish the conclusion and application
- Print out all the images, text, and cardstock that would be needed for the trifold
- Glue down the trifold and start practicing our presentation

February 28, 2026 – Personal Work (Mofe and Aspen)

- *we arranged a meet-up at Aspen's house for today!*
- Printed out information, titles and headings to put on trifold
- Finished typing up the conclusion and the application
- Also added in our citations and the acknowledgements

by next entry

- Glue all of our info onto the trifold
- Write out the script and practice, practice, PRACTICE!*

March 1, 2026 – Personal Work (Mofe)

- Glue everything together on the trifold
- Wrote our script and practiced our presentation by reading lines

by next entry

- Input all information into the CSYF portal in case we make it
- Good luck for us tomorrow!!

March 2, 2026 – School Science Fair Day!

- Went pretty well!
- *Don't forget – go to PAC for results tomorrow!*

March 3, 2026 – Personal Work (Mofe and Aspen)

- WE MADE IT YAYYYYYYYYY YESSS *we got silver and we're going to the next level :D*
- **Finalizing dates and workblocks on the logbook**
- **Entering finalized work and info onto CYSF portal**
- *** Finish absolutely EVERYTHING before 8:00 am on March 4!***

Script

Science Fair Presentation Script

1. *10–15 min speech summarizing info on trifold*

MOFE*
ASPEN*

Right side of board

Mofe: Hello, my name is Mofe,

Aspen: And my name is Aspen.

Mofe: Our project is titled "Colours and the Brain". The purpose of our project is to find whether or not the participants will perceive taste differently, based on the colour of the drink. We decided on this topic because we were interested in the visual marketing of drinks.

Aspen: After researching, we found that the brain does, in fact, perceive colors as specific tastes. For example, red is often associated with a sweet or a spicy taste. This is because of peoples' former experiences and knowledge with foods and drinks of specific colours. An example of this is if someone has had green candy before and it tasted unpleasantly sour, it could potentially create hesitance when met with that same color again.

Mofe: Colors can also bring unpleasant feelings as well, as darker or greener colors are usually associated with bitter flavours. For instance, black, green, and dark blue foods usually come off as bitter due to their dark nature, which would indicate molding or the state of being burnt. Along with that, these colors are very uncommon in most food products, which could cause people to generally want to stay away from them.

Mofe: Based on that research, we concluded that if we change the color of the drinks, even though they are all the same drink, each participant will perceive each drink as a different taste, giving it different rankings and having different opinions about all of the aspects tested. We believed that they would taste the lemonade differently each time, rating colors like pink, brown, and red the highest. Our purpose was to understand 4 different aspects of color and taste: which colors appear most appetizing (for marketing purposes), how color can affect an opinion long term, what each color is generally associated with when it comes to drinks, and what "flavours" are more desirable.

Aspen: We chose to conduct experiments because it would give us clearer and more accurate results for what we wanted to test specifically, which was how different colours of **drinks** (emphasis) affects peoples' perception of taste. We chose to base our experiment on drinks because they have a wider yet simpler range of associated flavours, which would allow us to apply this to marketing purposes.

Mofe: For our experiment, the manipulated variable was the color/tint of the drink that is being tested (which, in this case, we used lemonade). For example, green, pink, brown etc. The responding variable was how the participants reacted to the different coloured drinks, or what their opinions were. We tested this by asking them to rate the drinks based on different aspects (with a scale of 1–5), then have them give us their final opinion. Some of our controlled variables were, the type of lemonade, the amount of lemonade per serving, amount of food colouring.

Aspen: For the setup procedure, we first had about 2–3 jugs of the same lemonade. Then, we poured identical amounts of lemonade (25 mL) through a filter to remove the pulp, and diluted the lemonade with 25 mL water. This is to ensure that the participants wouldn't be able to guess as easily.

Mofe: Experiment procedure and materials!

*Middle side

Aspen: During our experiments, along with taking the rating scores from the participants, we also made sure to pay attention to their behaviours and reactions to the drinks. During our experiments, we noticed that the pink, red, and orange drinks were consumed much more eagerly and quickly than the blue, green, and brown drinks. We also noticed that, once they had proceeded to the blind taste test, they had very similar ratings and flavour guesses for each one.

Aspen: However we did have a few complications during our experiments that we noticed, and could be corrected and avoided with further research and more attempts. For the first experiment, we had the participants do the blind test first, which resulted in them being able to point out that all the drinks had about the same flavour. THe problem was that, the participants were able to quickly realize the reality of the experiment, meaning that the regular taste test would basically be useless.

Aspen: We also poured large amounts of lemonade per cup/serving, and didn't dilute it with water. The distinct flavour of the lemonade led the participants questioning that the drinks were all lemonade.

Aspen: For a few of the colours, we needed to mix a variety of colours together, causing them to be a little different each time. To fix this, we added a small, measured speck of color to a spoon, then mixed the spoon into the drink.

Aspen: Lastly, due to the lack of a proper pulp strainer, the pulp from the Simply Lemonade was apparent, and it could have made it easier for the participants to guess the flavours.

Mofe: After each experiment, we asked the participants to rank the drinks based on how good they tasted, and how much they liked the flavour. Then, we put the overall rankings based on the averages that we got from their results. *List out rankings* In addition to that, the participants were also asked to describe each drink that they tasted. *Read out the little sheet* Transitioning to our analysis, here are the most common flavours that were given to each color during the impression, regular, and blind tests. *Read out the data table.*

Aspen: Here(motions to graphs) we have 3 graphs, each of which represents a different taste rating categories: sweetness, sourness, and bitterness/blandness. From the difference in the graphs, it is clear that perception of taste varies due to colour. In addition, we have a fourth graph that we did out of curiosity, which tells us how *strong* or *intense the* participants think the drink was.

Aspen: for the sweetness graph, red, blue and pink (sample A, F, and C) received the top ratings. For sourness, yellow (sample E) received the highest rating in boat taste test and impression test. For bitter/blandness, Brown (Sample D) and Clear (Sample H) received the highest ratings. For the strength/intensity graph, strong colours like Green or Blue received high ratings. Most of the colours received relatively high ratings for strength/intensity, except for clear because of its diluted colour.

Left side

Mofe: The results of our experiment, as seen in our analysis, shows that there is a significant difference between the impression test, the regular taste test, and the blind taste test. The "impression test" that we did allowed us to see what colors were the most appealing when the participants were given a "first glance." These colors were Red, Orange, and Blue, due to their vibrant colors that indicated fruitiness. The "regular" taste test allowed us to understand if color could influence how a person perceives tastes, and how they do so. In this experiment we were able to prove that color does in fact influence taste, which proves our hypothesis right. Our blind taste test also supports this fact.

Therefore, in conclusion, color *does* affect how a person perceives a taste or a flavour, proving that our hypothesis is correct. Along with that, the color can also *overrule* the original taste, as proved by the colored drinks in comparison to the original, uncolored lemonade. Though our hypothesis was slightly incorrect, as brown and yellow were *not* favoured colors, we can say that our hypothesis was generally correct.

For the few things that we wanted to figure out, our results from the experiment did answer all of our questions. Firstly, the appetizing colors in drinks appear to be red, pink, and orange, when it comes to sweetness. However, when thinking about sourness and refreshment, blue and green may be better. These can also apply to other situations like marketing. Next, the color of something can definitely affect your opinion in the long term. How you see a color associated with a certain flavour can influence how you think that flavour tastes. Third, we can see that each color has a specific associated flavour and attributes, along with negative or positive connotations. Lastly, we can see that the most desirable "flavours" are watermelon, strawberry, and orange, though lime and different flavours of lemonade also fit into this category.

Together, all of the information we have gathered proves that color definitely affects how a person perceives flavours, in multiple categories.

Aspen: How is this information helpful? Why would anybody care? Our project is useful in real life as it could be helpful to individuals in marketing and promotion to better understand the influence each colour has on people. We will be using our impression test because it shows us how colors are viewed at a first glance. Here we have an analysis on the effect each colour has on peoples' taste, and how it could be used in marketing, especially in packaging and promotions of

Firstly, as seen from our results, red gives off a strong flavour, likely sweet, fruity, or somewhat spicy. Due to its almost guaranteed sweetness and bright color, it can attract consumers if it was used in marketing. A great way to effectively use red in marketing would be to use it for packaging or for large/important images.

Orange, similar to red, is a great color to use in food marketing due to its bright and warm color that symbolizes fruity freshness. As it indicates a tropical, warm, and tangy flavour, it would be great for attracting and appealing customers.

Yellow (Off-white): As shown in our impression test, and even in the rankings sheet, yellow was the most disliked color, and the least appealing one to our participants. This was because the yellow was very bright, often being described as acidic and highly saturated. While bright colors are usually good for marketing, yellow is not a good choice because of its intimidating color that could scare consumers away. Using off-white would be a better choice, as it could come off as bland or light and sweet, but yellows should generally be avoided.

Mofe: Greens and blues would be good choices for marketing sour or saturated products, as, to the right extent, they can be seen as sweet, sour, and also refreshing. This combination, though it didn't score the highest on our chart, came in close with the top 50%, and it is one of the most sought after tastes, especially on a hot day that needs refreshment. Their color combined with their associated flavour would be very appealing for consumers.

In our experiments, pink was one of the most contradicting colors. In the impression test, many believed it would taste bad because it looked a lot like medicine or minty mouthwash, both flavours that are commonly disliked. However, after they tasted it, they loved the sweet, refreshing fruity taste that it brought. In marketing, light pinks (like the one we used in our experiment), could backfire, as people may believe that it would taste minty or like medicine. However, to give it similar characteristics to the red, it would be better to make it darker or bolder to promote better marketing.

Lastly brown is generally a bad color to use in food marketing, as we can see that it scored the lowest ranking in our entire set. Many participants doubted trying the brown drink, and once they had tasted it, they believed it was so sweet that it tasted a bit bitter. In marketing, brown would be an unattractive and ineffective color to use, as it

would “scare” consumers away. Instead, marketers could use a lighter brown to indicate sweet, cinnamon vibes that could be a lot more appealing.

Example: Coca Cola <3

Since our experiment used 8 main colors that are seen in everyday life’s foods and drinks, our data could be valuable information on how to use colors in marketing based on how it affects their perception of tastes and flavours.

If we were to study further in this topic, we would make a second part, where we could investigate how specific *intensities* and *saturations* affect people’s perception of flavours, expanding the way that marketing could use colors to link to flavours.

Aspen: Here are our citations. We are thankful to the authors who made them as it was a significant part in conducting our research.

Mofe: To end our presentation, I would like to acknowledge the following people. *read acknowledgements*

Mofe: Thanks for listening!