The Tasty Age

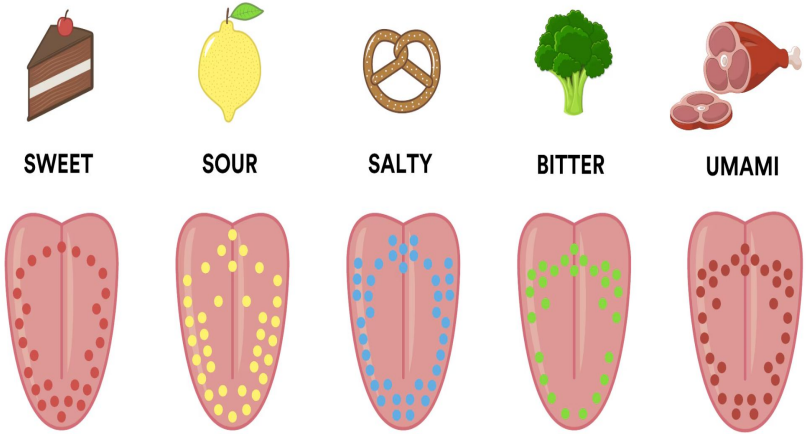
Does your age affect the intensity of tastes?

Introduction

For the science fair in [redacted] class, we have come upon the idea to test if people's age effects how they taste. We are going to test if people’s age effects how they taste with various items but to actually test this we are going to put packets of powder to mix with water, and then taste it to see how people taste things and then we will bring it home and do the same to our parents. We wanted to do this for a quantity of reasons but most of our class agreed upon that this would be fun and educational in the process. So, in foremost, testing if people’s age effects how they taste was the most voted upon idea in our class and we are excited we are doing it.

Background information:

First we learned that the five tastes are sweet, sour, salty, bitter, and umami. Sweet tastes like sugar or something made with sugar. Sour tastes acidic, like fruit or spoiled food. Salty tastes like a savory flavor that balances the body's water and iron. Bitter is often a warning sign for toxins or poison. Umami is Japanese for “essence of deliciousness”(usually savory).



Background information

Did you know that the taste zone map has been changed? The map came from something that was translated wrong in a 1901 study by a German scientist named David P. Hänig. His study showed that certain areas of the tongue were *a little bit* more sensitive to certain tastes. In the 1940s, Harvard psychologist Edwin G. Boring sorted this data in a way that made these small differences look like completely, separate areas, and that incorrect diagram became what was taught in schools.

Background information

We learned that the scientists at the University of Illinois found that kids can’t taste sugar as strongly as grown-ups do. Because of this, a drink that tastes just right to you might taste way too sweet to our parents. Kids have something called a "bliss point," which is the perfect amount of sugar that makes food taste the best. Your brain craves extra sugar as a kid because it’s a signal that you need lots of energy to grow. Kids are also able to taste bitter flavors more intensely than adults can.This is a safety trick from nature, since many dangerous poisons have a bitter taste. Even though kids taste sour more strongly, a lot of kids like high levels of sour tastes, maybe because they like intense sensory experiences, like swinging high on a swing or jumping on a trampoline. Children have more taste buds and cells for tasting on their tongues then grown-ups, so they might taste things more strongly. Grown-ups lose taste buds as they get older and they don’t grow back as quickly, so they can’t taste as strongly. Kids’ taste buds are replaced every two weeks, so our sense of taste stays strong. As people get much older, they lose about half of their taste buds, making food taste boring to them.

Predictions: Will kids or adults experience more intensity when tasting the 5 different flavors?

LJ- I think the kids will taste the liquids more because adults taste buds are getting old and not working as good as they did when they were younger.

CM-I think that kids tastes are not as powerful as adults cause the taste buds are not as developed or grown.

LP- I think the kids will taste it less than adults because adults have more experience with different flavors and kids have less experience and our tastes buds are still developing.

SP-I think that whoever has tasted more tastes will have stronger taste buds and be able to taste stronger than the others.

EY-I think that the kids will have stronger taste buds based on how there are these little taste dullers on your tongue that develop as you age.

GIB- I think that grown-ups have better taste because their taste buds have been used a lot more so their taste buds have been more developed. But with students, their taste buds have not been developed as much as adults.

Predictions

MS- I predict that the younger kids will taste better than the adults because I know for a fact that hearing wears off over time, so it might be the same with taste. Also, have you ever noticed that little kids are usually very picky whereas adults are usually not? I think that's another reason. I also noticed that my parents scores are slightly lower than mine.

ES- I predictit that mid age will taste better than older or younger people. Because there taste buds are old but they know the taste of a lot of food.

AW- I predict that younger people taste thing more bitter than older people, for instance most kids think foods are more bitter while adults think that they are quite delicious.

EW- I predict that the younger someone is the bolder something tastes.

VP- I predict that the kids will taste things lighter than grown-ups because there taste buds are less developed.

CY- I predict that the grown-ups will taste things less stronger than the kids because the grown-ups' taste buds are older and the kids' taste buds are newer and can be more effective

FJ- I think the kids will taste things stronger than the adults because kids dislike tastes that grown-ups tolerate.

Procedure

Each student had five small Dixie cups with 2 tablespoons of water in them. The cups and water were all the same. Each cup either had ⅛ teaspoon of lemon juice, unsweetened cocoa powder, sugar, salt, or beef broth added to it. The students stirred each one time using separate wooden spoons so they didn't cross contaminate the flavors. They placed a piece of cardstock over the cups so that they had to mostly use their sense of taste. Then the students took a taste of each cup and marked its intensity from 0--8 on a scale they were given. They also gave a descriptive word about the taste. The students took a sip of water between each flavor. Next, we put 10 Dixie cups in a bag and 5 spoons. We included 5 small bags with ¼ teaspoon each of lemon juice, unsweetened cocoa powder, sugar, salt or beef broth so that students could give the taste test to two adults at home. The students had two identical taste scale recording papers to use. They repeated the experiment with two adults. Finally, as a class, we put our data into the spreadsheets and found the averages and then created a graph from the averages of the tastes.

Recording sheet:

Name: _____ Age: _____ Gender: _____

Use this scale for each of the five basic tastes (Sweet, Sour, Salty, Bitter, and Umami).

- **0: None** – I can't taste it at all (like plain water).
- **1: Barely There** – I think it's there, but I'm not 100% sure.
- **2: Very Weak** – It's definitely there, but very faint.
- **3: Weak** – I can easily tell what it is, but it's mild.
- **4: Medium** – The taste is clear and balanced.
- **5: Strong** – The taste is very noticeable and bold.
- **6: Very Strong** – It's starting to take over my whole mouth.
- **7: Intense** – The taste is extremely powerful.
- **8: Explosive** – The strongest version of this taste I can imagine.

Taste Category	Intensity Rating (0-8)	Descriptive Word (e.g., "Sharp," "Mellow")
Sweet		
Sour		
Salty		
Bitter		
Umami (Savory)		

Students tasting the flavors and recording their results.

Results/Raw Data and Averages

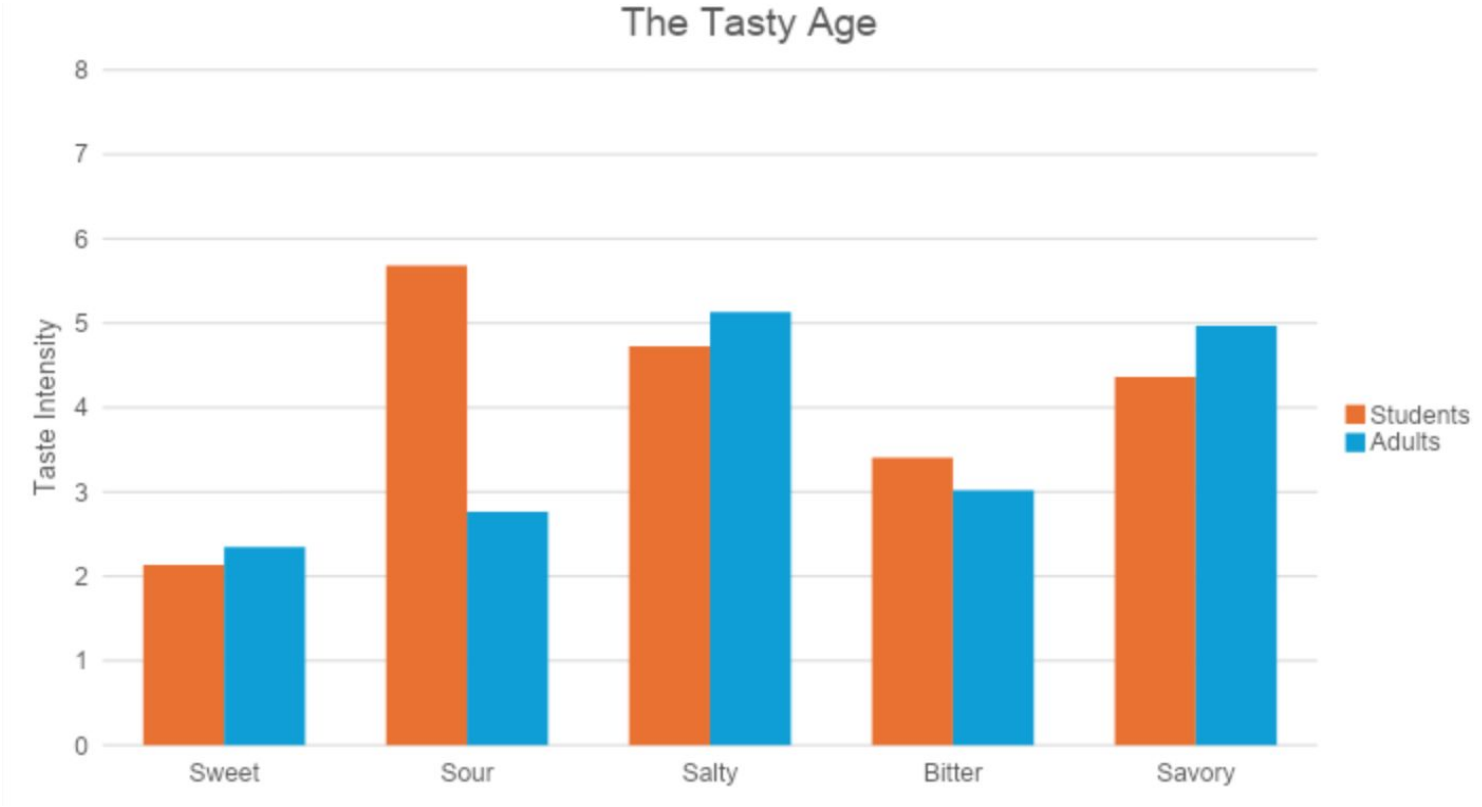
	Sweet	Sour	salty	bitter	savory
	1	1	4	0	2
	3	0	6	1	5
	3	4	5	5	6
	3	4	5	7	5
	3	7	6	4	4
	3	4	7	2	8
	4	2	5	6	7
	2	1	6	3	6
	3	3	7	0	5
	2	1	5	3	7
	3	6	4	7	7
	2	6	5	6	7
	2	1	3	6	4
	2	3	5	3	4
	1	1	7	3	6
	3	2	7	4	6
	1.5	3	5	2	6
	1	5	2	3	0
	3	2	7	4.5	7
	4	5	2	3	6
	0	0	3	2	0
	3	2	4	1	0
	3	2	8	1	6
	2	1	7	1	6
	3	3	6	2	7
	3	3	4	2	7
	3	1	7	2	4
	1	3	2	2	4
	1	3	5	2	3
	2	4	5	3	4
Average	2.35	2.766666667	5.133333333	3.016666667	4.966666667
Std Dev	0.9751215662	1.813423764	1.655363974	1.940864246	2.189053225

Parent Data

	Sweet	Salty	Sour	Bitter	Savory
	3	5	6	5	2
	3	4	3	2	4
	2	6	4	5	7
	2	5	1	3	0
	2	7	3	8	5
	3	7	4	5	4
	2	8	7	4	8
	1	5	5	3	7
	2	7	3	3	5
	1	7	4	2	3
	4	6	7	5	4
	4	8	2	0	7
	1	8	8	7	2
	4	4	6	4	6
	3	5	2	4	1
	0	5	5	2	4
	3	5	6	4	5
	0	8	8	4	4
	1	2	5	0	4
	3	6	7	3	7
	2	3	5	1	4
	1	4	3	1	3
Average	2.136363636	5.681818182	4.727272727	3.409090909	4.363636364
Std Deviation	1.2069424	1.701158251	2.004324329	2.039119579	2.082705533

Student Data

Results/Data



Discussion and Interpretation

-As you can see in the graph, students tasted sour about 2x stronger than adults. This suggests that younger people can taste sour 2x stronger than adults.

- In the graph, we can see that kids and adults did not taste sweet as much as sour.

- In the graph you can see that kids and adults tasted almost the same flavors in sweet, savory, salty, and bitter.

-As you can see in the graph, adults tasted sweet, salty, and savory stronger than students but only by a small amount, whereas students tasted significantly more sour.

-In the first part of our research, we learned that kids taste sour more than adults and that's what we found.

-Some of us thought parents would taste bitter more because many of them drink coffee in the morning.

-Some of us thought adults would taste bitter less because many of them like bitter flavors.

Implications and Next Steps

Our initial experiment proves what we read in the research that students taste sour things more strongly than adults. Next, we looked at the descriptive words the kids wrote and saw that 13 kids wrote positive descriptions and 7 wrote negative descriptions. The adults had 32 positive descriptions and 0 negative ones, which agrees with what the research we read said. Our next step is going to be to test 5 flavors that are a different intensity of sour flavors and repeat the experiment and compare the data. We were going to use: lemonade, lemon juice (from the original experiment), Sour Patch Kids, Warheads and Extreme Sour Patch Kids.

The implications would be to share the information so parents understand why kids might not like certain food or flavors and maybe not ask them to taste them again until they're older. It can also explain why kids like sour candy like Warheads and Extreme Sour Patch Kids because they like the sensory thrill of them. We could also share our findings with food or beverage companies so they can add flavors to their foods or drinks or even chemical companies so they can use the flavor if they want to discourage kids from eating something.

References

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