



# HOW DOES **SMELL** AFFECT **TASTE?**

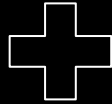
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# INTRODUCTION

Our **smell** and **taste** are one of the most important senses that we have, which is why we chose to look deeper into the topic of our senses. So we decided to do an experiment on how **smell affects our taste**.

## SMELL

Our smell can detect almost thousands of different odours, which can trigger memories and emotions. Once we smell something, it automatically triggers the **olfactory neurons**, which causes signals to be sent to the brain.



## TASTE

There are many sensory cells around our mouth and tongue and the sensory cells help detect the **four basic flavours (salty, sweet, bitter, and sour)** in our food. The food we taste is heavily influenced by its aroma that is sensed by **olfactory receptors**.

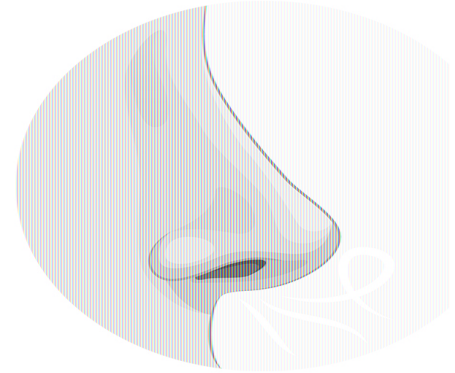


## TASTE & SMELL

Our taste and smell are like partners in crime in our nervous system. They both **depend on each other** (although taste is more dependent on smell). All the smells and things we taste become a combination of information in the brain, which is why we remember the way things taste when we smell something. **Taste and smell are both chemical senses** meaning it is able to register information about the substance before coming in contact with it using **chemoreceptors**.

# HYPOTHESIS

The **Smell** of food/beverage has an affect on the way we **taste** as when we **smell** something we have eaten before, our brain remembers the **taste** and expects it to **taste** a certain way.



# PROCEDURE

We have 3 different groups:

**Control group** (The group that will be able to smell the food that they are tasting )

**Experimental / treatment group 1** ( The group that will not be able to smell anything as they eat the food )

**Experimental / treatment group 2** (The group that will be smelling a different food as they eat )





# **PROCEDURE-** Experimental / treatment group 1

( The group that will not be able to smell anything as they eat the food )

( no pictures for this)

- Pick 24 different people *\*ensure they have no allergies to the food they will be eating\**
- Ask the participants to plug their nose
- Blindfold the participant
- Ask them to lick the chip chosen (some people will eat the sour substance, some people will eat the sweet substance, some people will eat the bitter substance, and some will eat the salty substance)
- When they have finished eating ask them to fill out the survey

## **PROCEDURE-** Experimental / treatment group 2

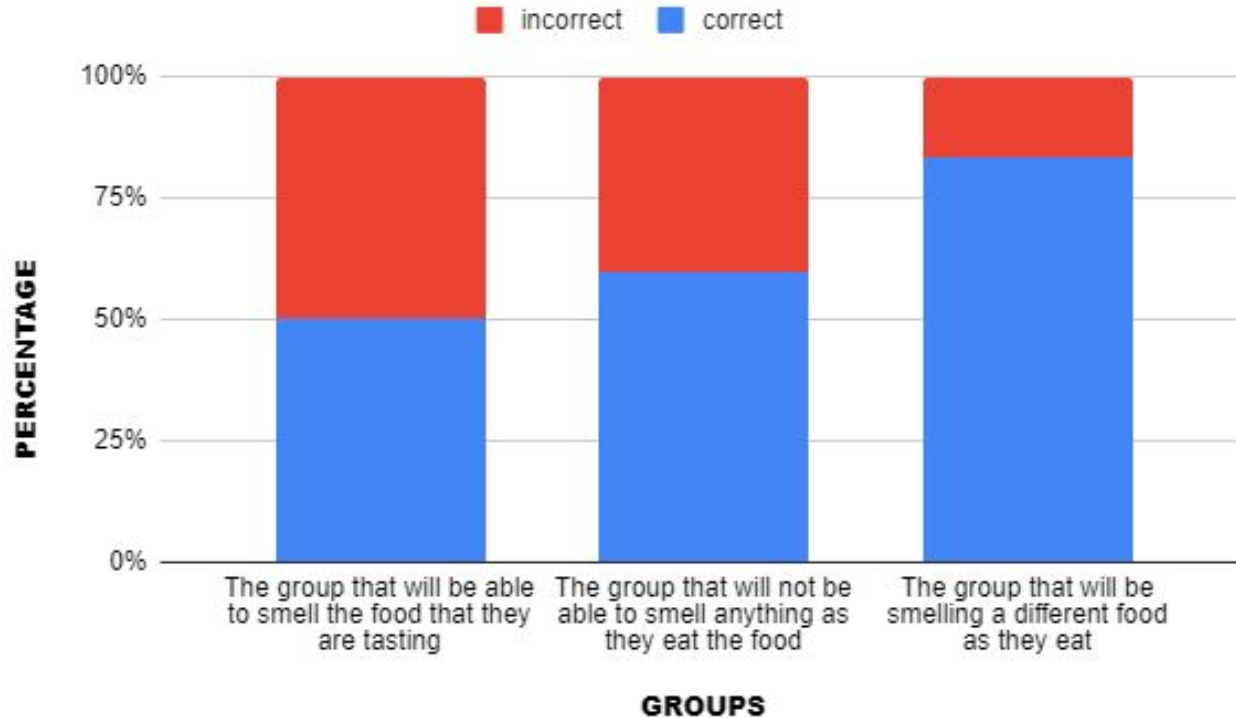
(The group that will be smelling a different food as they eat )

### **( no pictures for this)**

- Pick 24 different people *\*ensure they have no allergies to the food they will be eating\**
- Blindfold participant
- Hold the food to participant's nose and allow them to eat while smelling
- Ask them to eat the food chosen (some people will eat the sour substance, some people will eat the sweet substance, some people will eat the bitter substance, and some will eat the salty substance)
- When they have finished eating ask them to fill out the survey

# RESULTS

percentage of participants that got it incorrect and correct in each group



There was **no significant relationship** between the two variables. It is not very likely for smell to have an affect on taste.

The group that was able to smell the food they were tasting: **5/10 participants got their guesses correct**

The group that was not be able to smell anything while they were eating: **12/20 participants got their guesses correct**

The group that was smelling a different food as they were eating: **10/12 participants got their guesses correct**



# DISCUSSION

The chi-square test of independence we performed showed that there is **no significant relationship between our smell and taste**, proving that our hypothesis was not correct. The chi-square statistic is 2.9452 and the Pi-value is .22933,  $X^2 (2, N = 42) = 2.9452, P = .22933$ . We expected that when we carry out our experiment the participants will say that the taste of the food they ate was not what they expected or tasted different from when they've eaten it before. However, our results show that **the participants did not see a difference in taste of food when their ability to smell was taken away or when they smelled a completely different food**. The reason our hypothesis was incorrect can be due to the fact that there were many errors while performing our experiment. While performing the experiment we found that the participants were too close together and they smelled the foods that the other participants were eating/smelling and they had an impact on each others answers for the survey. There was also very little participants.

# CONCLUSION

Our data shows that our hypothesis is incorrect. There is no significant relationship between our smell and taste. The data shows that if a person's ability to smell was taken away or becomes distorted it will not affect their taste. Our hypothesis states: that when we smell something we have eaten before, our brain remembers the taste and expects it to taste a certain way, our data show that that is supposedly incorrect. We can see that since in treatment groups 1 and 2 there was more people getting their guesses of what they were eating correct compared to the control group which is the opposite of what we were expecting to happen. If our hypothesis was correct there should've been more people getting their guesses wrong rather than correct in treatment groups 1 and 2 as in those groups there smell has been altered or taken away. Though our data can not directly prove whether smell affects our taste as the data we collected is not completely reliable due to the errors we ran into while experimenting.

# ACKNOWLEDGEMENTS AND REFERENCES

We would like to thank everyone who participated in our science fair experiment, without our participants we wouldn't be able to have our conclusion and answer as to why smell affects taste!

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