SASTA OLIPHANT SCIENCE AWARDS

Prize Winner

Scientific Inquiry

Year 3-4

Daniel Boucher

St Peter's Woodlands Grammar School

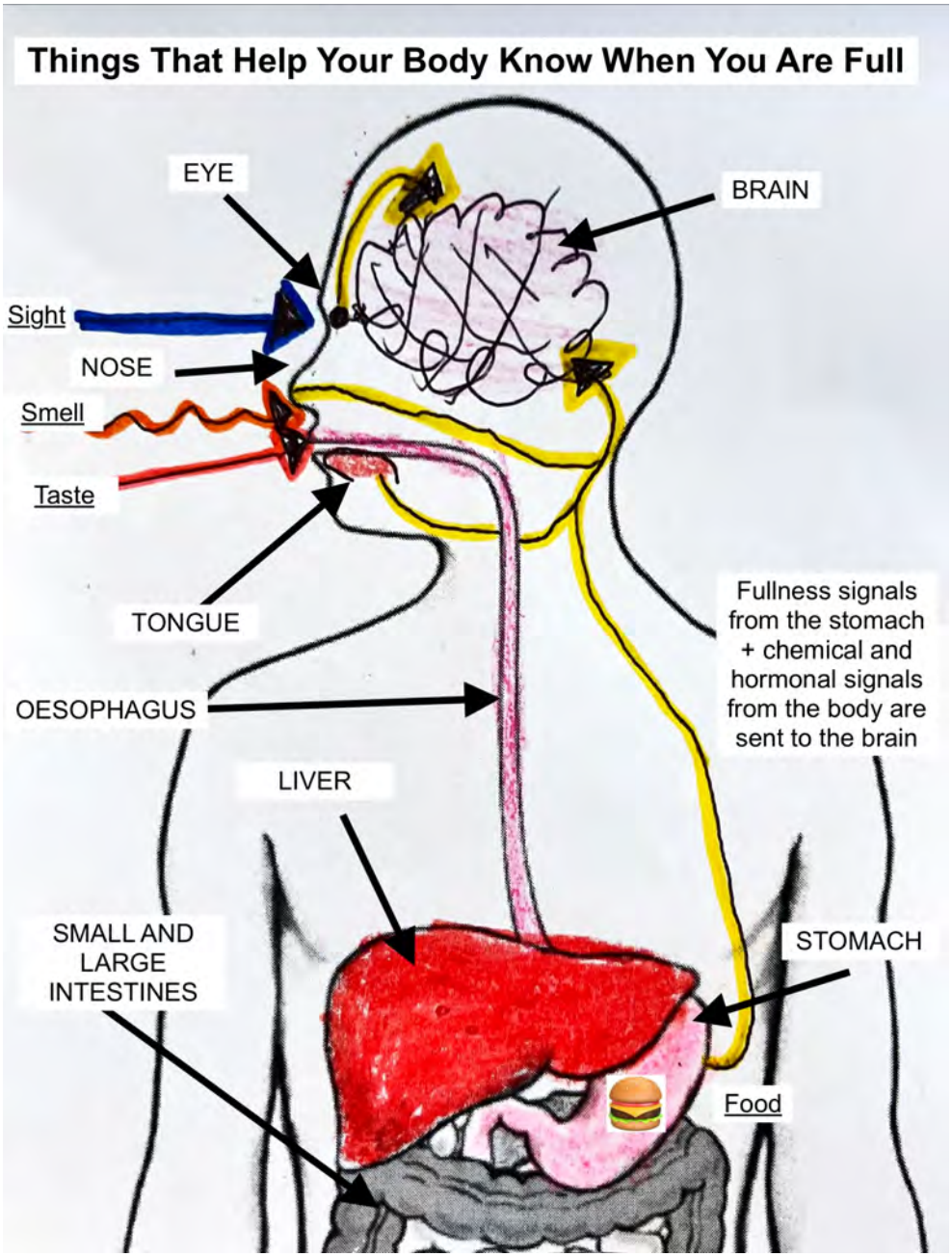
You EYE What You Eat

By Daniel Boucher

Questioning and Predicting

At school, we used to watch TV while we ate lunch, but at home, we aren't allowed to watch TV while we eat our meals. This made me wonder if it was bad for you to watch TV while you eat.

The purpose of eating is to get food and nutrients into your body, which helps you grow, survive, learn and be active. This helps to keep your body healthy and helps you to feel good. We have to eat a balanced diet and a healthy amount of food to do these things. How do we know when we are full? Your body and brain get signals from smell, taste and sight about the food we are eating. We know when we are full because the brain picks up nerve signals from your stomach to say that your stomach is stretched by the meal, and there are hormones released into the blood that also send signals to your brain to say that you are full.



When you are watching TV or are distracted, your brain might not notice the signals as well because it is too focused on watching TV. This might make you eat more or less than you need, and this could affect your growing and functioning, and over time, your health. It might even affect the type of food you want to eat.

I read some information from a news article and it recommended that you shouldn't watch TV while you eat, but the different studies and research showed different conclusions. One group of studies found that there was little evidence to suggest that we eat more when watching TV compared to doing other things such as reading, playing video games or eating with friends. One study showed that watching TV that is interesting while eating may make people eat less food, however something boring could make you eat more.

This led me to my question: how does having distractions during meal time affect how you eat?
My hypothesis is: that you might eat more food, and eat more quickly when you are watching TV, because you can't tell when you are full because the signals aren't reaching your brain because of the distraction.

Planning and Conducting

I decided to study my brothers' (Subject 1: 2 years old, Subject 2: 6 years old) eating habits with and without TV as a distraction. I decided to use breakfast as the meal to study because they would be hungry and wouldn't be tired from the day. I decided to use Weetbix for the healthy food option and ProNutro Chocolate for the less healthy food option. I decided to use Paw Patrol for the TV show because they both like it and are interested in it. I think the effect will be bigger with the sweet cereal compared to the healthier option.

Equipment and Materials
- Bowls, spoons and table
- Weetbix
- ProNutro Chocolate or other high sugar cereal option
- Milk
- Weighing scale
- TV
- Timer

Method
Variables are distraction (TV vs no TV) and cereal type

1. Prepare the breakfast - a rough guide below.

	Subject 1	Subject 2
Weetbix Option	2 Weetbix with almond milk (100mL)	3 Weetbix with almond milk (125mL)
Pronutro Option	Approximately 120g Pronutro with 100mL almond milk	Approximately 150g Pronutro with 150mL almond milk

2. Weigh the bowls
3. Put the bowls on the table. Start the timer. Allow eating time for 15 minutes, then record the weight of the bowl after eating, then calculate the difference (the total eaten) and record in the table.
4. Repeat the experiment on different days with and without TV (2 days for each variable)

Processing and Analysing Data Information

I recorded the information in these tables below then made graphs of the information.

Pronutro with no TV

	Bowl weight (g)	Food weight (g)	Second helping (g)	Left overs (g)	Total eaten (g)	Time taken	Observations
Subject 1							
Day 1	338	121	-	0	121	3min 46s	
Day 2	345	168	-	0	168	5min 15s	Eaten very quickly
Subject 2							
Day 1	310	159	-	0	159	4min 16s	
Day 2	340	250	-	0	250	5min 33s	Reading a book

Weetbix with no TV

	Bowl weight (g)	Food weight (g)	Second helping (g)	Left overs (g)	Total eaten (g)	Time taken	Observations
Subject 1							
Day 1	310	124	214	87	251	5 min	Eating very quickly
Day 2	310	187	113	76	224	5min 23s	
Subject 2							
Day 1	330	154	92	35	211	11min 15 s	Reading a book
Day 2	312	224	0	20	204	4min 55s	Reading a book - quite distracted by this. Asked for frozen mango when finished. Said he didn't like weetbix

Weetbix with TV

	Bowl weight (g)	Food weight (g)	Second helping (g)	Left overs (g)	Total eaten (g)	Time taken	Observations
Subject 1							
Day 1	328	156	86	38	204	7min 37s	
Day 2	343	165	0	56	109	8 mins	Doesn't seem to be eating at all. Spoon in mouth staring at TV
Subject 2							
Day 1	311	163	82	37	208	6min 55s	Looks to be eating quite slowly
Day 2	328	229	0	47	182	4 mins	

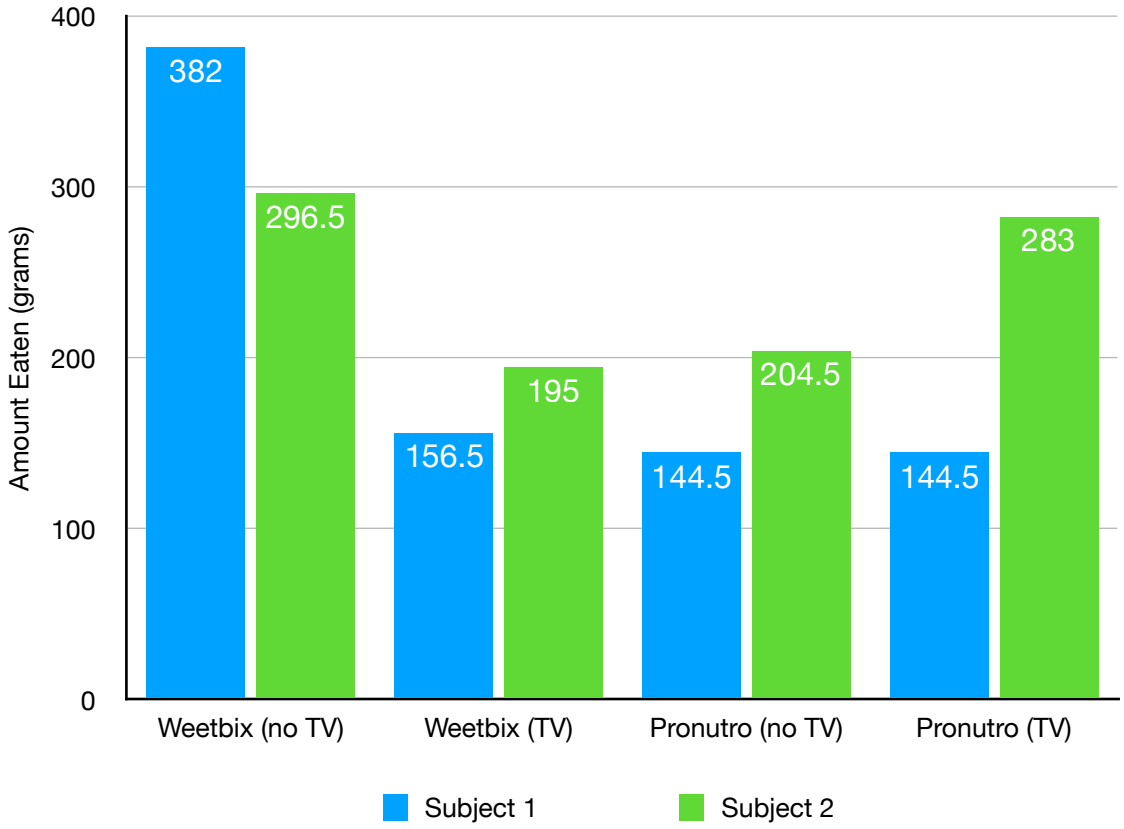
Pronutro with TV

	Bowl weight (g)	Food weight (g)	Second helping (g)	Left overs (g)	Total eaten (g)	Time taken	Observations
Subject 1							
Day 1	338	172	-	101	71	12min 30s	A bit sick today Staring at TV Sometimes completely stops eating for a long time
Day 2	338	164	142	88	218		It looks like subject one was very distracted and ended up getting pronutro all over himself
Subject 2							
Day 1	345	183	151	58	276	11 min	Staring at TV Eating more quickly than when he was reading a book, but sometimes not eating at all
Day 2	333	200	238	148	290	8 mins 50 seconds	Subject 2 was half watching, half eating

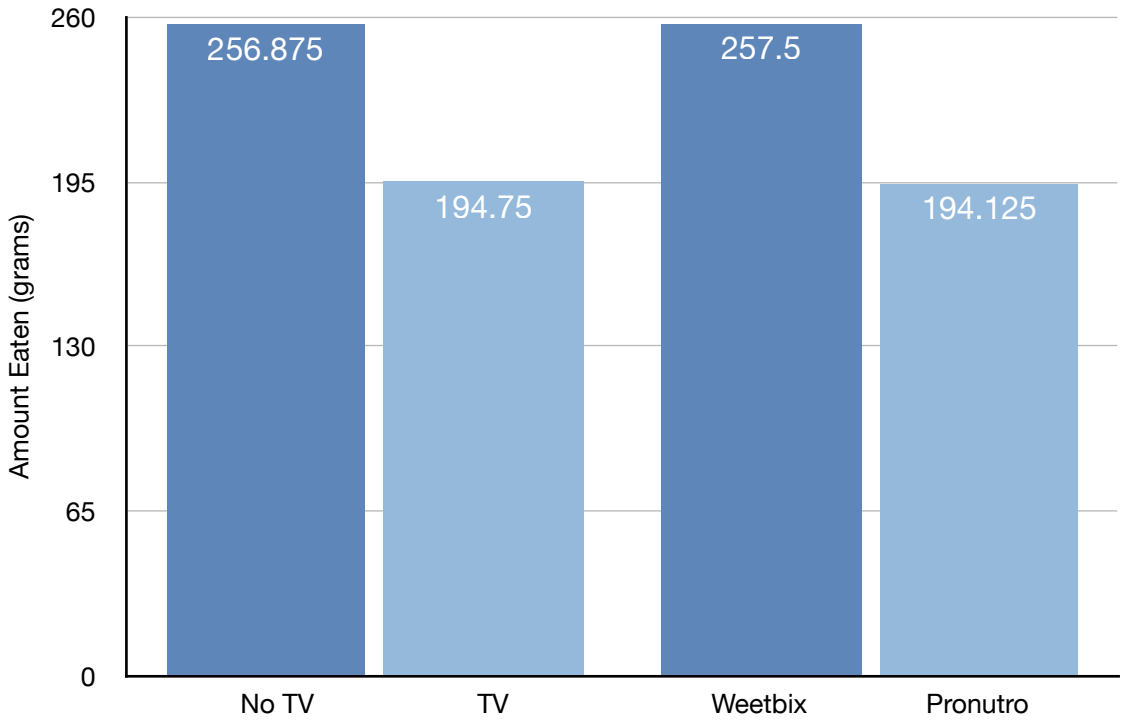
Average Amount Eaten

	Subject 1 Average (g)	Subject 2 Average (g)
Weetbix with no TV	382	296.5
Weetbix with TV	156.5	195
Pronutro with no TV	144.5	204.5
Pronutro with TV	144.5	283

Average Amount Eaten

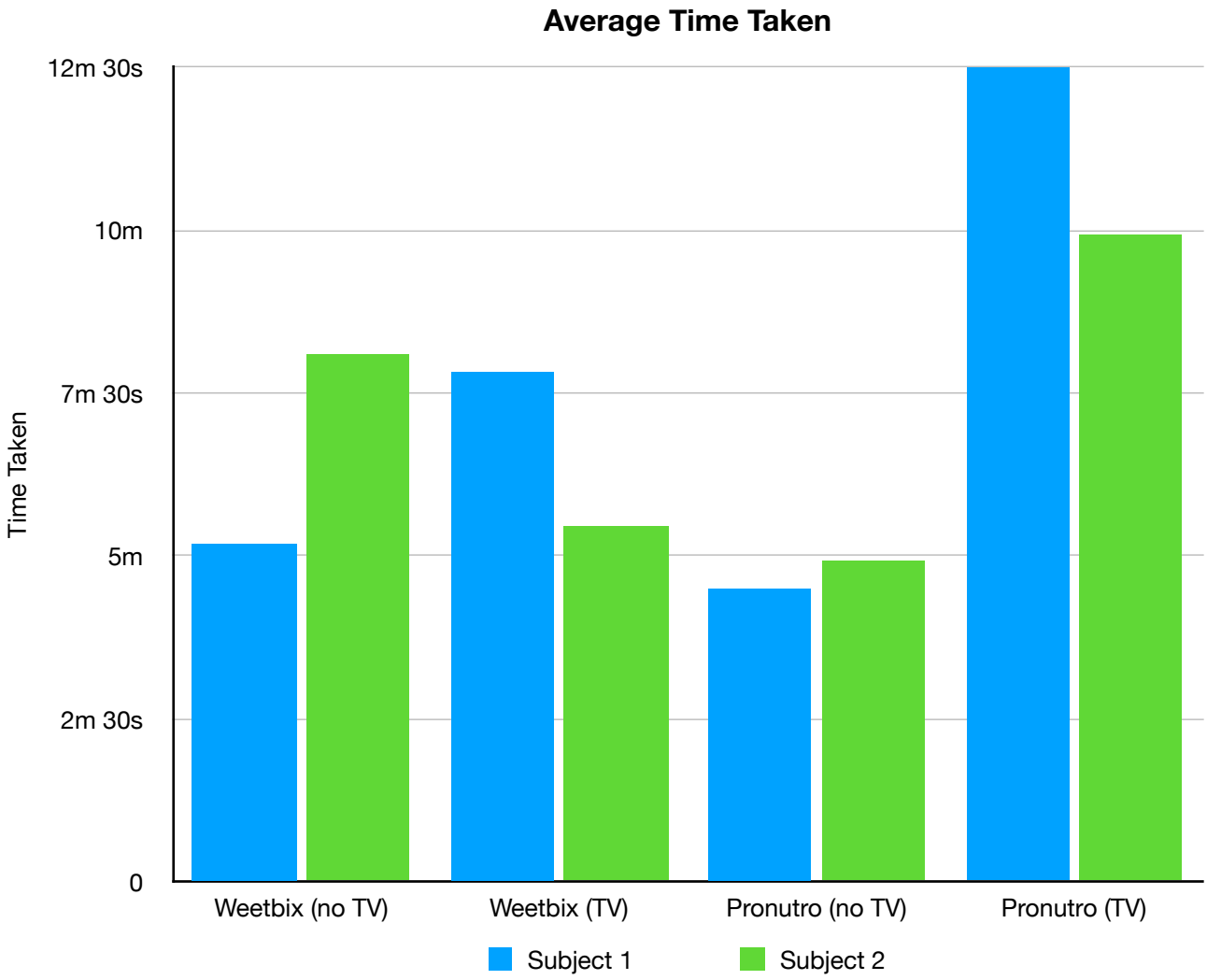


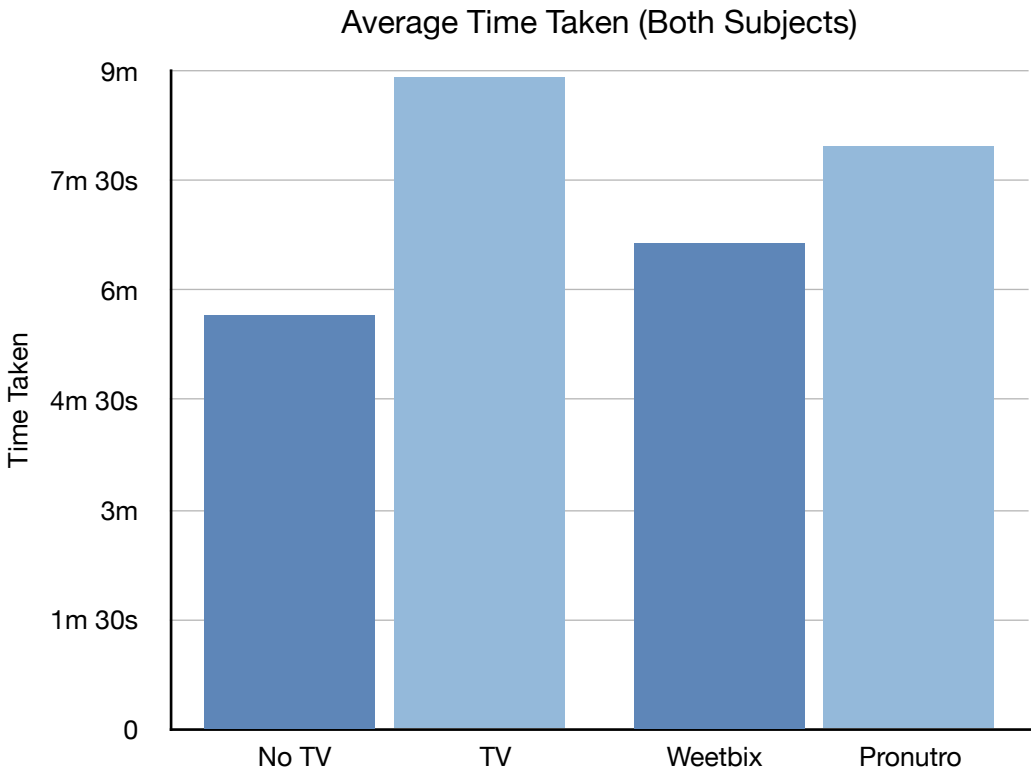
Average Amount Eaten (Both Subjects)



Average Time Taken To Finish Meal

	Subject 1 Average	Subject 2 Average (minutes)
Weetbix with no TV	5 mins 11s	8 min 5 s
Weetbix with TV	7 mins 48 s	5 min 27 s
Pronutro with no TV	4 min 30 s	4 min 54 s
Pronutro with TV	12 min 30 s	9 min 55 s





Evaluating and Communicating

My study question was, ‘does watching TV affect how much and how quickly you eat?’ . I also investigated whether there was also a difference between a healthy cereal and high sugar cereal. My hypothesis was that the subjects might eat more food, and eat more quickly when watching TV. My results were different to what I expected. Overall they ate more when the TV was off, ate more healthy cereal than high sugar cereal and ate slower when the TV was on.

The results show that Subject 1 ate way more breakfast when eating Weetbix with no TV on. There wasn’t much difference between the amount of Pronutro eaten with and without TV. The results for Subject 2 were not consistent when watching TV or not watching TV. This subject ate similarly with Weetbix with TV and Pronutro with no TV. Subject 2 ate similar amounts of Weetbix with no TV and Pronutro with TV. This could have been affected by another unplanned distraction that Subject 2 was doing - reading a book! I could not tell Subject 2 to stop reading because I did not want to remind him that I was studying his eating on those days, in case that affected the results.

Both subjects took the longest time to finish their eating when having Pronutro while watching TV. They both ate fastest without TV. Other things I noticed when the TV was on which were unrelated to the things I was measuring were:

- they weren’t talking or looking at each other
- there was a lot of arguing with my parents when it was time to put the TV off
- it was harder to get to school on time because more time was taken up watching TV and eating more slowly
- Subject 1 was very messy with his food when the TV was on, and spilled cereal all over himself and on the table

If I did my study again, I would observe and measure more days to improve the reliability of the results. I would also try to study Subject 2 without reading as a distraction because it would be interesting to see what happened then. It would also be helpful to study even more subjects, or study what happens in classrooms when the children are eating with TV and no TV.

I don’t think it is good to eat with the TV on because you might eat less and take longer to eat. Having the TV on also might mean that families don’t talk to each other as much, which could make the family grow apart. I think my investigation was useful to help people learn about how watching TV while eating might affect our eating habits.

Word count - 1025

References

https://www.niddk.nih.gov/news/media-library/18188 (I used the outline of the body shape and drew, coloured and added my own labels)
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The Control of Food Intake: Behavioral versus Molecular Perspectives: Cell Metabolism
Is eating in front of the TV really that bad for you? (https://www.cell.com/cell-metabolism/fulltext/S1550-4131(09)00119-3)
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Secret to happy kids - a bit of TV and the odd takeaway - BBC News (https://www.bbc.com/news/health-27141110)

Acknowledgements

Thanks to my Mum for helping me with typing and formatting and Dad for helping me to make the graphs on Numbers

Logbook: You EYE What You Eat

By Daniel Boucher

10/5/25: Brainstorming about the experiment

Aims: To investigate how distraction affects the way people eat. One of the articles I read also thought that people eat more unhealthy food when the TV is on compared to healthy food.

My ideas for distractions:

- TV (I could compare eating while watching cartoons and then something boring)
- My mum reading a story?
- Reading a book while eating - but the 2 year old subject can't read yet
- I am going to measure how much they eat while distracted compared with no distractions

Planning the method:

I need to keep the other variables the same. The variables are:

1. The food
   I will keep this constant by keeping same food for each test because their enjoyment of the type of food will affect how much they eat and how fast they eat.
   Choosing the food: I have chosen Weetbix (healthy option) and Pronutro (high sugar option) as they both like eating these cereals.
2. The meal time
   I will also keep the time of day the same (breakfast) because their appetite might be affected by tiredness and what they ate during the rest of the day.

How will I measure and observe?

I will weigh the plate - before and after eating, and measure the difference

I will observe their behaviour - looking at food or TV, conversation, interaction with other people at the table

I will also measure the amount of time taken to finish the food or how much food is eaten in a set time.

If the subjects know I am studying them, it might change their behaviour so I will try not to talk about what we are doing on the days I am studying.

TYPICAL NUTRITIONAL INFORMATION
AS PER DRY PRODUCT
1 Serving = 5 Dessert spoons = 50 g

Nutrients		Per 100 g	Per serving	% NRV*
Energy	(kJ)	1401	701	
Protein		16.8	8.4	15
Glycaemic Carbohydrate	(g)	50	25	
of which total sugar	(g)	26.0	13.0	
Total fat		8.0	4.0	
of which saturated fat	(g)	1.7	0.9	
of which trans fat	(g)	< 0.1	0.0	
of which monounsaturated fat	(g)	2.0	1.0	
of which polyunsaturated fat	(g)	4.3	2.2	
Cholesterol	(mg)	< 1	0	
Dietary fibre**	(g)	11.4	5.7	
Total Sodium	(mg)	235	118	
Vitamin A	(µg RE)	540	270	30
Thiamine (Vit B1)	(mg)	0.7	0.4	30
Riboflavin (Vit B2)	(mg)	0.8	0.4	30
Niacin (Vit B3)	(mg)	9.6	4.8	30
Pantothenic acid (Vit B5)	(mg)	3.0	1.5	30
Vitamin B6	(mg)	1.0	0.5	30
Biotin (Vit B7)	(µg)	18	9	30
Folic acid (Vit B9)	(µg)	240	120	30
Vitamin B12	(µg)	1	1	30
Vitamin C	(mg)	60.0	30.0	30
Vitamin D	(µg)	9	5	30
Vitamin E	(mg)	9.0	4.5	30
Vitamin K	(µg)	72	36	30
Calcium	(mg)	530.0	265.0	20
Iodine	(µg)	90	45	30
Iron	(mg)	10.8	5.4	30
Magnesium	(mg)	252.0	126.0	30
Selenium	(µg)	33	17	30
Zinc	(mg)	6.6	3.3	30

* NRV = Nutrient Reference Value for individuals 4 years and older
** Method used to determine total dietary fibre: AOAC 985.29

Pronutro has 50g of carbohydrates per 100g, 26g of this is sugar. Weetbix has 65g of carbohydrates per 100g, 2.7g of this is sugar.

17/5/25: Risk assessment

There are no risks to safety identified. Because I am studying people, I will need to get consent. My brother agreed to do the experiment but my 2 year old is too young to be able to agree. I have made a permission form which my mum has signed to give permission for them to participate in the study. I won't put their names into the work to protect their privacy.

8/6/25: Research and making a hypothesis

Today I researched about TV and the effects on eating habits and made my hypothesis. I think the subjects will eat more food when watching TV when compared to having no TV. I wrote my method and equipment. I will start the experiment tomorrow.

9/6/25 - 26/6/25: Conducting the investigation

Some changes and other things to consider that happened during the experiment:

- the subjects ate more than I expected and asked for second helpings during some of the days. I then had to measure the extra food put into the bowls.
- Subject 2 keeps bringing a book. I asked him not to but he always loves reading at meal times and didn't want to stop. I decided not to stop him because I thought it would affect his eating behaviour if he knew I was studying him. However it has introduced a different variable and distraction - reading a book. This is likely to affect his results which will now be a comparison between TV and reading. I won't be able to have a result with no distractions.
- Subject 1 is very messy when the TV is on

Pronutro

Weetbix

Pronutro with no TV

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Weetbix with TV

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Subject 1							
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Day 2	343	165	0	56	109	8 mins	Doesn't seem to be eating at all. Spoon in mouth staring at TV
Subject 2							
Day 1	311	163	82	37	208	6min 55s	Looks to be eating quite slowly
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Pronutro with TV

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Day 2	333	200	238	148	290	8 mins 50 seconds	Subject 2 was half watching, half eating

28/6/25: Calculating averages and making graphs

I calculated the average amount eaten and time taken by adding the totals from each day for each experiment and then my Dad helped me to make graphs on Numbers.

I recorded my thoughts and my summary into my main project document.
Next time I would do the study over more days to improve the reliability of the results. I would have to think of a way to keep Subject 2 from reading a book during the 'no distraction' part of the experiment. I might also include reading a book as a type of distraction to study.

I think this investigation was interesting. It helped me to think about eating and the effect TV might have on how much you eat, but also how it affects social interaction during meals, causes conflict when it has to be turned off, and makes mornings run late.

OSA RISK ASSESSMENT FORM

for all entries in (✓) ☐ Models & Inventions and ☑ Scientific Inquiry

This must be included with your report, logbook or entry. One form per entry.

STUDENT(S) NAME: Daniel Boucher _____ ID:_____

SCHOOL: St Peters Woodlands _____

Activity: Give a brief outline of what you are planning to do.

I will observe the eating behaviour and amount of food eaten by two subjects (2 year old and 6 year old) and whether this is affected by the type of food given, and having the TV on as a distraction.

Are there possible risks? Consider the following:

- Chemical risks: Are you using chemicals? If so, check with your teacher that any chemicals to be used are on the approved list for schools. Check the safety requirements for their use, such as eye protection and eyewash facilities, availability of running water, use of gloves, a well-ventilated area or fume cupboard.
- Thermal risks: Are you heating things? Could you be burnt?
- Biological risks: Are you working with micro-organisms such as mould and bacteria?
- Sharps risks: Are you cutting things, and is there a risk of injury from sharp objects?
- Electrical risks: Are you using mains (240 volt) electricity? How will you make sure that this is safe? Could you use a battery instead? **Only batteries can be used for Models & Inventions entries*
- Radiation risks: Does your entry use potentially harmful radiation such as UV or lasers?
- Other hazards.

Also, if you are using other people as subjects in an investigation you must get them to sign a note consenting to be part of your experiment.

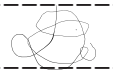
Risks	How I will control / manage the risk
No chemical, thermal, biological, sharps, electrical or radiation risks or other hazards have been identified I am studying people so there is a permission form attached to my project.	

(Attach another sheet if needed.)

Risk Assessment indicates that this activity can be safely carried out

RISK ASSESSMENT COMPLETED BY (student name(s)): _____

Daniel Boucher

SIGNATURE(S):  _____

☑ By ticking this box, I/we state that my/our project adheres to the listed criteria for this Category.

TEACHER'S NAME: _____

SIGNATURE: _____ DATE: _____