



Prize Winner

Scientific Inquiry

Year 5-6

Miroslava Baryshaikova

Annesley Junior School



The effect of music on ice crystals and water

0018-013 Scientific Inquiry: Miroslava Baryshnikova., year 5/6 Annesley Junior school (1093 words without headings, titles and references).

Background info:

As a composer, I would like to make people healthier. I could not test the effect of my piano piece, Riverfall, on human health as I could not perform blood or other medical tests. However, as the human body is made of approximately 60% water [9], anything that influences water could potentially impact the human body as well. I discovered that in scientist Emoto's experiment [2], water that listens to different music and sounds forms different ice crystals. I conduct a similar experiment using Riverfall, Chopin's Raindrop Prelude and Nasty's Resurrection.

Questioning and predicting

Question:

How does exposure of water to different types of music affect the crystallisation of water and its taste?

Hypothesis:

My hypothesis is that the water that listens to Raindrop Prelude or my Riverfall will produce more beautiful crystal patterns and better taste than the water that listens to Nasty because Nasty is angry while Raindrop Prelude and Riverfall are pleasant sounding. This is because Emoto proved that exposing water to positive words or classical music creates visually more "pleasing" crystals due to the pace, volume and vibration of the music and words. [1] [2] [3] [4]

Planning and conducting:

I chose to expose 4 bottles of water from the same package to 3 pieces of music, and then freeze the drops from each water bottle. After 2 days, the crystals were examined under the microscope for patterns and the water was tasted for taste.

Variables:

Independent variables:

. Music: Riverfall by me [8], Raindrop Prelude by Chopin [6], Resurrection by Nasty [7], and 3 min of silence for control.

I chose Chopin because it is a classical piece, similar to Riverfall, with pleasant tones and harmony. For "ugly" music, I chose "Resurrection" by Nasty for angry unpleasant screaming.

Dependent variables:

. The patterns and the beauty of the crystals (qualitative observations in pictures)
. The taste of the water, measured by the number of pleasant and unpleasant tastes observed. The different tastes are taken from the water tastes poster found on google. [5]

Control variables:

. Microscope magnification
. Water source
. Room and freezer temperature
. Freezing time
. Time in the car

- . Music volume
- . Room lighting
- . Container type

The test is fair because I only change the music each bottle listens to, and the music affects the crystals formation and taste according to my hypothesis. I also have a control bottle that listens to nothing, but stays close to the phone, to see if the music really makes any difference.

Material/equipment:

- . Phone with YouTube access to music [7], [8], [9]
- . 60x microscope
- . 24 clear plastic containers
- . 4 Coles water bottles
- . 4 pipettes
- . Ice and ice packs
- . 1 tray
- . Freezer set to -18C
- . Marker
- . A car in the garage

Method:

Part A: Crystals

The experiment is conducted in the daylight at 1pm.

1. Using the marker, label the 4 bottles 1, 2, 3 and 4.
2. Place bottles 2, 3 and 4 in the car in the garage.
3. Take bottle 1 to the living room.
4. Place your phone next to bottle 1 and open the bottle.
5. Play Riverfall.
6. Close bottle 1, bring it back to the car, moving the water as little as possible.
7. Repeat the procedure (3-6) with bottles 2-4, playing "Raindrop Prelude" to bottle 2, "Nasty" to bottle 3. For bottle 4 do not play any music but keep open for 3 minutes (approximate music exposure time for other pieces) next to the phone.
8. Bring all the bottles to the living room, take the tray with the container lids on it (Petri dishes).
9. Using one of the clean pipets, place 1 drop of water from bottle 1 on each of 6 containers in row 1.
10. Repeat step 9 for bottles 2 - 4 using different clean pipets, making samples rows 2 through 4 respectively.
11. Place the tray in the freezer set to -18C, using minimal movement.
20. Wait 2 days.
12. Take out the ice cubes and ice packs and put them on the table
13. Take one sample from the freezer and place it on the ice so the drop doesn't melt.
14. Observe and take photos under the microscope.
15. Repeat with each drop, row by row until there are no more drops to look at.

Part B: Tastes

1. Each participant (me and my mum) is given each of the 4 bottles (after steps 1-7) at random twice through without knowing the bottle number.
2. After sampling from each bottle, each participant records what tastes they tasted each time from the list of tastes given [5]



Taste Vocabulary Poster



Figure 1: list of tastes from taste vocabulary poster

3. Count how many times each taste was selected by all participants together in all samples.
4. Define these tastes categories: Pleasant: minty, sweet, mild, tasty, yummy, fruity, delicious, scrumptious, flavourful and crispy. Unpleasant: salty, umami, sour, yucky, tangy, bitter, acidic, spicy, rotten, hot, stale and disgusting. Neutral: tasteless, bland.
4. Record how many pleasant, unpleasant and neutral tastes were detected in each bottle. Tastes that were recorded at least once in any bottle were noted while the rest were discarded.
5. Find the percentage of pleasant, unpleasant and neutral tastes in each bottle.
6. Find which music makes the water taste best: the bottle with the highest percentage of pleasant tastes.

Processing and analysing data:

Results A: Crystals

I was unable to see the crystals, but I could see some patterns of crystal formation in the pictures of ice drops.

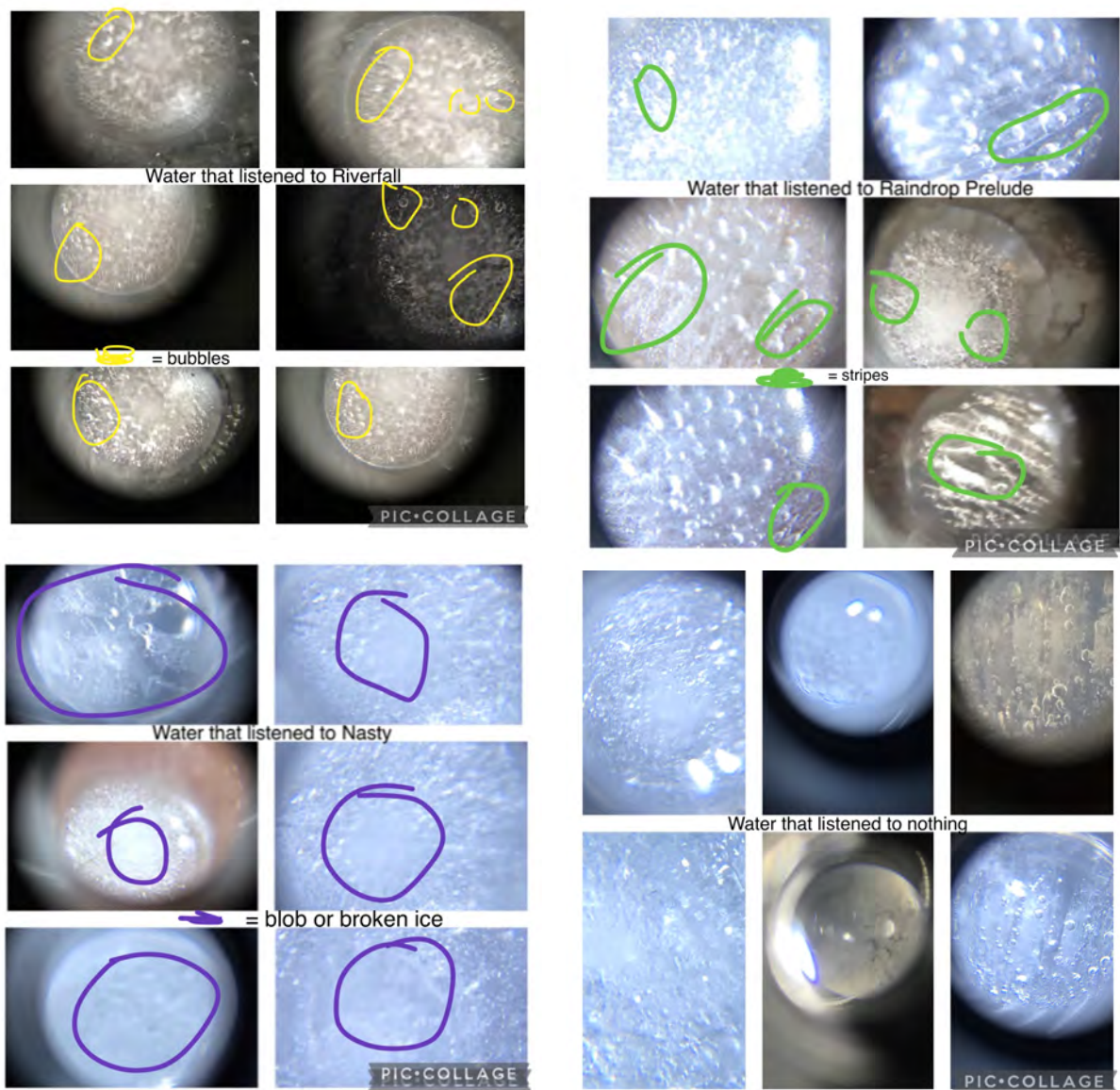


Figure 2: frozen water droplets under the microscope.

The crystals from water that listened to Riverfall appear clear and contain many bubbles, showing the presence of air pockets. In contrast, the crystals formed after the Raindrop Prelude have stripes and have bubbles in most pictures, suggesting a more organised geometric pattern. The ice formed after Nasty lacks the earlier observed pattern and resembles broken, foggy, and asymmetrical ice. On the other hand, the control water crystals, which were not exposed to any music, lack a pattern, have few bubbles, and appear clear.

Results B: Tastes

Taste:	Mum	2	4	3	1	2	1	4	3	Me	4	1	3	2	3	2	4	1
Salty																		
Umami																		
Minty	X				X													
Sour			X															
Yucky										X				X	X			
Tangy			X				X											
Bland																		
Bitter			X															
Acidic																		
Spicy																		
Sweet				X	X	X												
Mild				X														
Tasty	X				X													
Rotten																		
Hot																		
Stale																		
Peppery																		
Yummy													X					
Fruity									X				X		X			
Delicious				X		X									X			
Scrumptious																		
Flavourful				X		X			X			X	X		X	X	X	X
Tasteless		X					X	X	X	X	X	X	X				X	X
Duiscusting			X		X					X				X			X	X
Crispy	X																X	X

Figure 3: table with all the tastes that participants tasted

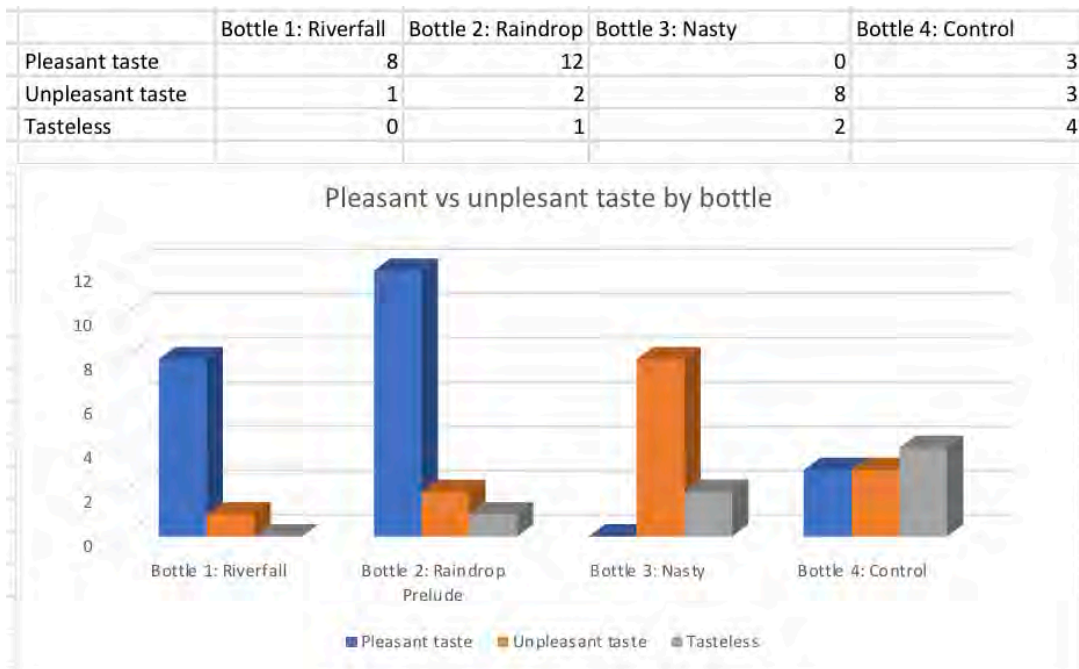


Figure 4: graph of pleasant, unpleasant and neutral tastes for each bottle.

That means that bottle 1 had the best and most pleasant taste (approx 88%), bottle 2 had the second best taste (approx 80%), bottle 4 had third to best taste (approx 30%) while bottle 3, that listened to hard rock, was the least pleasant (approx 0%).

Evaluating:

I was not able to see the exact crystals as Emoto did, probably because my microscope was not strong enough. I could use a better microscope, increase the sample sizes (drops, number of tasters) and number of music pieces, and use a colder room.

Future ideas:

I would like to use my cat to select water from different bowls because animals have a stronger sense and instincts for which water is best to drink.

It would be nice to measure the effect on health directly.

Conclusion:

My music and Chopin music made water taste better and produce nicer ice patterns. Maybe listening to this music could also affect the water inside humans and lead to better health.

References:

1. Masaru Emoto Wikipedia https://en.m.wikipedia.org/wiki/Masaru_Emoto, accessed on 28 April, 2023.
2. Water Experiment By Dr. Masaru <https://www.alivewater.ca/dr-masaru-emoto/> Accessed on 18 May, 2023
3. Double-blind test of the effects of distant intention on water crystal formation. <https://pubmed.ncbi.nlm.nih.gov/16979104/> Accessed on 18 May, 2023
4. Science of water. <https://masaru-emoto.net/en/science-of-messages-from-water/> Accessed on 18 May, 2023
5. Tastes poster. <https://www.twinkl.com.au/resource/t-t-252942-taste-vocabulary-display-poster>. accessed on 1 June, 2023
6. Chopin on YouTube <https://youtu.be/CU9Rgl9j7Do>
7. Resurrection by nasty on YouTube https://youtu.be/Us7N71B_U1A
8. My Riverfall can be found on YouTube <https://youtu.be/06NFRK-h6mY>
9. The water in you: water and the human body. Water Science School <https://www.usgs.gov/special-topics/water-science-school/science/water-you-water-and-human-body> accessed on 26 June, 2023 and multiple times in February.

OSA RISK ASSESSMENT FORM

for all entries in Models & Inventions and Scientific Inquiry

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

STUDENT(S) NAME: Miroslava Baryshnikova ID: 0018-013

SCHOOL: Annesley Junior School

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

Question: How does exposure of water to different types of music affect crystallisation of water and its taste? I

I plan to make the water listen to different music, freeze the drops & examine them under the microscope. I also plan to taste this water & ask my mum to taste it as well.

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?
- 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
<ul style="list-style-type: none">- phone next to water & spills- microscope & ice melts- me & mum tasting water	<ul style="list-style-type: none">- keep enough distance between phone & water. Take care to prevent spills.Have tissues nearby!- not put microscope in freezer.- not put microscope on melted ice/water- mum sign agreement, use clean cups.

(Attach another sheet if needed.)

Risk Assessment indicates that this activity can be safely carried out

RISK ASSESSMENT COMPLETED BY (student name(s)): Miroslava Baryshnikova

SIGNATURE(S): 

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

TEACHER'S NAME: N Baryshnikova

SIGNATURE:  DATE: 20/5/2023

Agreement to participate in experiment.

I consent to be part of the experiment conducted by Miroslava Baryshnikova from Annesley Junior school titled "The effect of music on ice crystals and water".

I agree to taste bottled water that listened to different types of music and report the tastes as I feel them. The data will be used in the report and log books.

Name: Nailya Baryshnikova

Signature: 

Name: Miroslava Baryshnikova

Signature: 

Journal log book

0018-013 Scientific Inquiry: Miroslava Baryshnikova, year 5/6 Annesley Junior, School 2023

16/02/2023 - 3/3/2023

Mum listened to meditation music and I thought: how come that makes me feel all light and wobbly? And makes me feel good? I don't feel that way when I listen to popular music. I thought that perhaps music influences the human body. Different types of music influences the human body in different ways. Would the music I compose have the same good effect? Is it good for health?

Questions: how do I test this out? I can't test this out on the human body as I can't run tests: do blood tests, X-rays, or anything like that.

I googled the effects of different music and found out about Masaru Emoto's experiments. He conducted many experiments to do with water and how water catches and keeps vibrations from things that happen around it.

https://en.m.wikipedia.org/wiki/Masaru_Emoto

I first thought how beautiful things can be and then, how interesting it would be to test this out and find out if it really works. Would my own music be good for health? How would it affect water?

According to the Water Science School,
<https://www.usgs.gov/special-topics/water-science-school/science/water-you-water-and-human-body> (Accessed between March 1 and June 26, 2023)

water makes up more than half (on average 60%) of the human body. So if music affects water, it also would affect human bodies.

I decided to use my music, Riverfall, and conduct an experiment similar to Emoto.

27/4/2023

Shared my ideas and plans with Christiana, my science teacher, and asked if I could use a microscope. What section would it be under for the Science Award? I decided it would be a scientific inquiry.

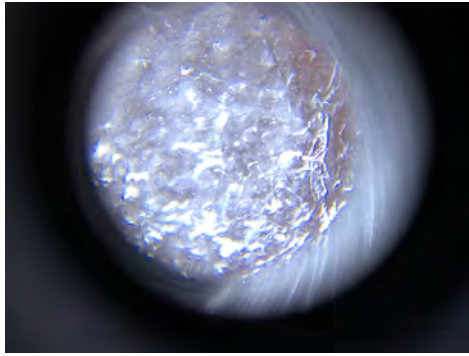
I was told that we do not have a microscope at school but we have a clip-on microscope that is at 60X magnification. I googled whether it will be enough and google said that anywhere between 40 and 100 magnification would do.

29/4/2023

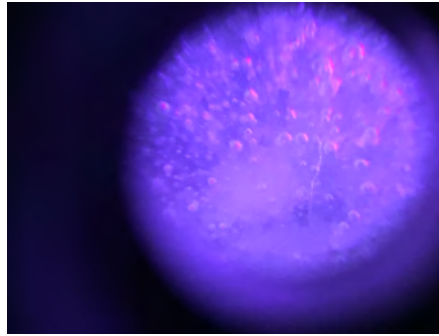
Picked up microscope and pipettes from Christiana.

17/5/2023

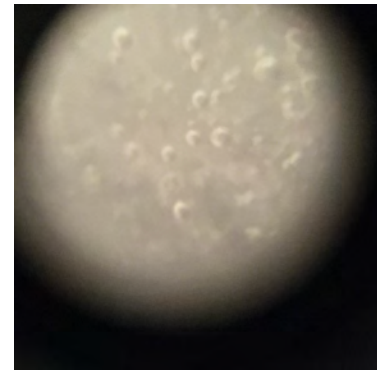
Tried to test my microscope and phone combination and see something with an ordinary drop of tap water frozen in my fridge; this is what I saw:



Drop under ordinary light.



Drop under LED light.



Drop under no light

When I did this, I noticed that ice was melting quickly and it was difficult to observe crystals and structure. So I brainstormed ideas on how to modify my experiment. I thought about doing the observations outside, or in the garage, or while holding the sample in the fridge. I was told not to put the microscope in the fridge as it would get ruined. I decided to place ice and other cold things used in eskies underneath the Petri dish. Also, I am not 100% sure whether this microscope is strong enough and will work. I decided to do more research on the methods and equipment.

18/5/2023

I researched more on google what type of microscope is necessary for observing ice crystals and what methods they used for the experiments. I first checked Dr Emoto's experiments.

Here the water was far away and people sent good thoughts to the water. Then bottles were shipped to the lab. (My mum helped me access this article and understand it).

<https://pubmed.ncbi.nlm.nih.gov/16979104/>

Here he talks about how different vibrations from different emotions and thoughts affect the structure of water. It can be observed and "measured" by the different shapes of the water crystals.

<https://www.alivewater.ca/dr-masaru-emoto/>

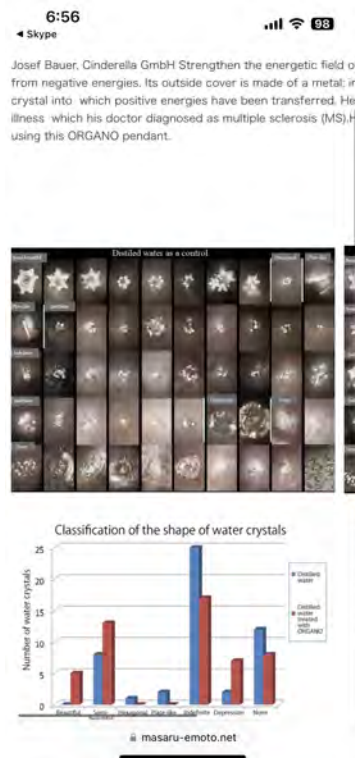
I found the video that shows different crystals formed from listening to different things. There was so much difference between good and bad words crystals. The crystals look so beautiful!

<https://youtu.be/1qQUFvufXp4>

I found a link on Emoto's double blind experiment with 4 bottles. Two of these bottles were "treated".

<https://masaru-emoto.net/en/science-of-messages-from-water/>

There are pictures of the crystals and a graph description to tell the difference between the crystals. He talks about asking 100 people to judge the beauty of the crystals. This is what I hope to see in my experiment too:



I finally found a video that talks about the method. They put drops of water into 50 Petri dishes and froze them in -25°C . Then, they used the cold room and observed them under the microscope.

<https://youtu.be/P78VZzaHDVA>

In some of his videos Emoto shows dry freezing the water samples. In others, I can see they use a freezer and look at them in the cold room. However, the type of microscope was not mentioned in any of these links.

I decided to follow the google answer that said that 40x-100x magnification on a simple optical microscope was enough.

I searched more on how to observe ice crystals. Here the cite said that the major problem is the ice melting. They suggested to put dry ice and other things underneath.

<https://chemistry.stackexchange.com/questions/70038/observing-crystal-of-water>

I do not have dry ice and it might not be safe so I decided to use regular ice and ice packs. Maybe that would still work.

My clip type led cellphone microscope that I borrowed from school claims to have 60x magnification, which should be enough. This is the best microscope available to me.

I researched Adelaide microscopy with mum in hopes that I would be allowed to use it, but they were too costly. My mum went to the Adelaide arcade shop to ask about microscopes they have. However, they cost too much for us to afford and may still not work the way I would need. So I decided to use the one I have.

19/5/2023

I got the risks form. I think I need to take care of water being near electricity if I use speakers and phone. I will put the phone far enough so the water does not spill on the phone or electric parts. I also need to not use the microscope in the fridge.

Thought about how to play music to water. Piano or speaker.
First I thought of playing by myself my own piece. But then there might be a difference because of the phone and piano use and it will not be a fair test.
Decided to play all on my phone next to the water. I recorded my piece before for the composer award, so I decided to use that recording.

20/5/2023

Thought about which music I would like to test. My Riverfall is one (<https://youtu.be/06NFRK-h6mY>) But I would like to compare with one good and one nasty and angry music.
Searched YouTube for some terrible hard rock. I typed the key word nasty and the Resurrection by Nasty came up.

https://youtu.be/Us7N71B_U1A

It sounded so angry and bad, I couldn't even listen to it. My mum and I held our ears and we immediately switched it off. I think that will be perfect.

For a nice one I chose Chopin's Raindrop Prelude.
<https://youtu.be/CU9Rgl9j7Do>

Should I play by myself or should I pick the one on youtube? Which one would be the best comparison to the others? Riverfall is played by me but Nasty is played by someone else, so I guess it doesn't matter. I chose the YouTube version by someone else because that way it will be smooth playing. If I play it I could have hiccups and mistakes and that might affect the results. So the results could be different because of my mistakes and not due to my music.

I thought that the water needs to be clean and similar. I thought to take water from 4 separate bottles from Coles. Emoto took bottles. They come in the same package. What if one were contaminated or different somehow? That could affect my results. So maybe I could take the same bottle, but then it may be affected by the different cups or holders. It looks like no matter which way I go something will be different. So I decided to just take 4 bottles as it is easier to manage. This will have to be a limitation.

I remembered about control. To be a fair test it needs to be compared to plain water. So I need to have the fourth bottle.

I mentally walked through the steps of my experiment.
I realised that while one bottle of water listened to its music piece the other bottles could hear it as well if they are in the same room and would be affected. This would muddle the experiment. I need to hide them somewhere and bring them out one by one. I brainstormed where I could keep them and decided that the car in the garage behind all closed doors would be enough.

I also realised that the control bottle also needs to be sitting next to the phone not listening to anything to make it a fair test. This is because phones have vibrations and waves too and this may affect the water. As the others have to be next to the phone to listen they include the phone effect. So the control bottle will just sit next to the phone listening to nothing. That way they will all have the phone effect and the differences between them will not be due to the phone.
Also it needs to sit next to the phone for the same amount as the others. So I checked the timing of the pieces: Riverfall is 4 min, Chopin is 3.18 min, Nasty is 1.5 min. They are slightly different so I decided to take an approximate average. My control will sit for 3 minutes.

28/5/2023

I need something like Petri dishes but don't have. I googled but found that it is only available online and will take time to ship. I thought about what can be a replacement : a lid, some plastic jars.. but they have to be small enough to stick under the microscope and not have high sides. They need to be small and clear.

Found with mum these storage containers at Kmart for a good price. 24 pieces - perfect substitute because they are small, clear, and there are 24 of them, so 6 can be used for each type of music.



Emoto used many drops per each type as well (angry words, kind words).

I went to Kmart with mum to buy the containers.

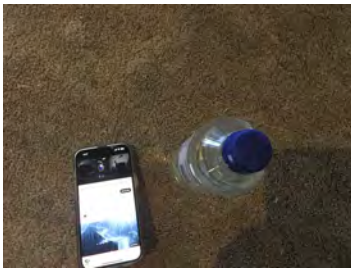
Conducting the experiment.



All bottles together, labeled 1,2,3,4.

Bottle 1 listening to Riverfall.

Bottle 2 listening to Raindrop Prelude



Bottle 3 listening to Nasty.

Bottle 4 standing next to the phone. Bottles, pipettes, tray lids



Water dropped from each bottle on to 1 of 4 rows.

Drops of water in the freezer.

All bottles of water came from the car so they had the same experience.

When I sent the water drops into the freezer, I let myself and my mum try the remaining water from the bottles, this is what they tasted like to me and mum:

Riverfall:

Me: it tastes clean with a bit of airy sensation.

Mum: it tastes crisp, clear,

Nasty:

Mum: pungent, yuck, revolting

Me: yucky

Normal:

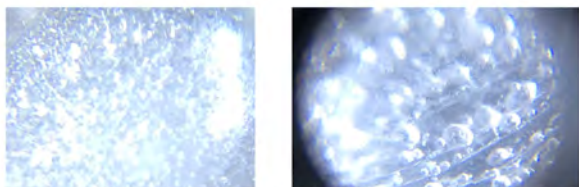
Me: it just tastes... normal... and plain.

Mum: calm, room temperature, tasteless

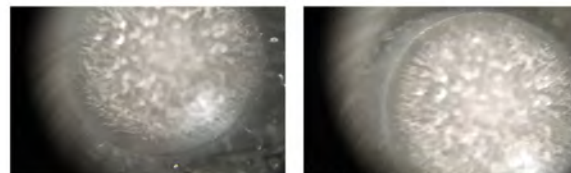
This is interesting! I did not think about it before. Could it be psychological? Because we know which bottle listened to what?

1/6/2023

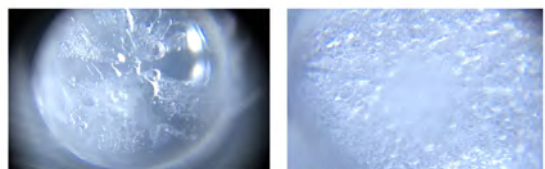
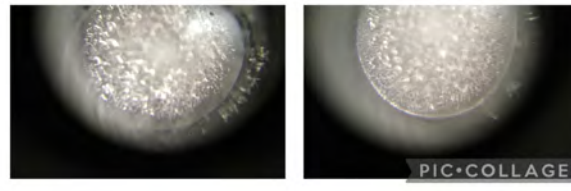
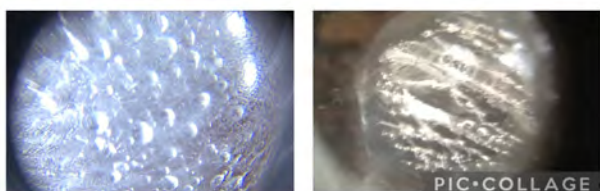
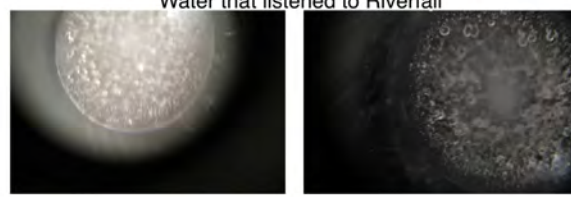
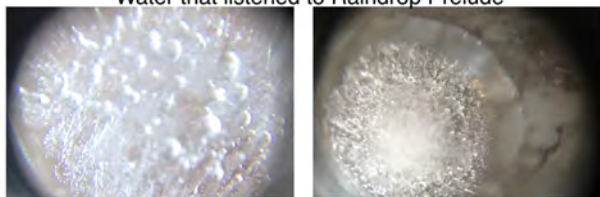
The water drops are now frozen and I can do the second part now. I set up my ice packs on the table which will help my drops not to melt so quickly. I took out one Petri dish at a time and put it on the ice, and quickly observed under the microscope which was attached to my mum's phone.



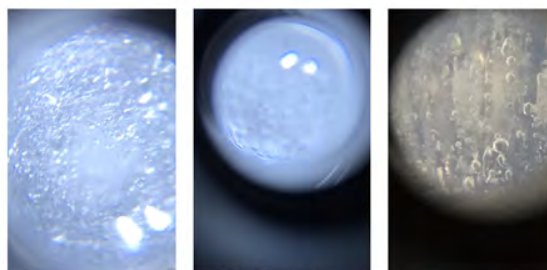
Water that listened to Raindrop Prelude



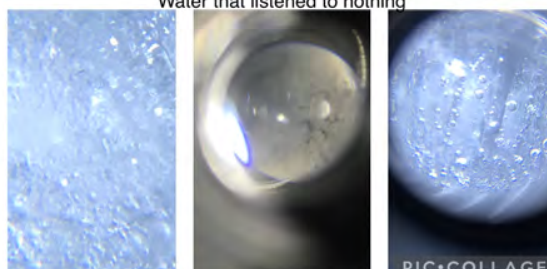
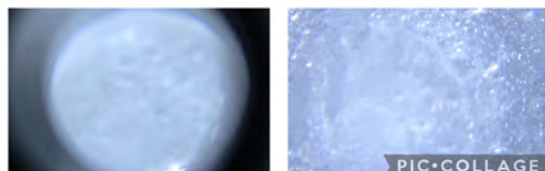
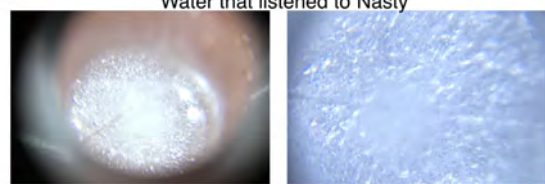
Water that listened to Riverfall



Water that listened to Nasty



Water that listened to nothing



This is not what I expected as I was hoping for snowflake crystals like Emoto had. Maybe I need a different microscope after all. Maybe I need to use more drops for bigger sample size, so I could see more things. Perhaps if I evaluate these in a cool room I would also see more. I don't know how Emoto's researchers see single snowflake-like crystals instead of connected ones in the ice structure.

The results I do see are as I expected in the sense that patterns and more beautiful structure are observed in the water that was listening to pleasant music. Chopin pictures have distinct stripes. They also have some big bubbles but not as many as in the Riverfall pictures. Riverfall pictures have lots of tiny bubbles surrounding the centre. The pictures of water that listened to Nasty appear cloudy and have no beautiful patterns. The drops from the control bottle have no distinct beautiful pattern.

30/5/2023

After conducting the experiment I was thinking on what to do with the remaining water, and what else could music affect in water. The crystals can't, just can't be the only thing that music affects. Water takes in vibrations so maybe the music affects the taste as well? I tasted each bottle, and yes, all 4 bottles tasted differently. I decided to continue to measure the way music changes the water by tasting the water and recording the different tastes that each bottle contained. To be more scientific and be able to observe patterns, I googled different tastes and found a poster with 25 different tastes. I decided to make a table where I can record the tastes of each bottle, and I decided to use the tastes from this poster at <https://www.twinkl.com.au/resource/t-t-252942-taste-vocabulary-display-poster>:



Taste Vocabulary Poster



Having the list of tastes to choose from would help make sure that I can observe, measure and compare the tastes quantitatively.

So my mum and I tasted each bottle of water and selected all the tastes we experienced from the list. To make sure that it is a fair test, I made it a blind test. That will make the results more accurate because when you know which bottle it is, you know that it should taste in that way, and when you think something, it can sometimes influence the actual taste. After recording the tastes for each bottle I revealed to my mum in what order she tasted the bottles in. After I did that to her,

she did the same with me. Because it was just the two of us, to make the sample size bigger, we repeated the bottle tasting exercise again, blindly and randomly. This doubled the sample size: from 2 to 4.

This is the raw data in my table:

Taste:	Mum				Me											
	2	4	3	1	2	1	4	3	4	1	3	2	3	2	4	1
Salty																
Umami																
Minty	X			X												
Sour			X													
Yucky									X			X	X			
Tangy			X			X										
Bland																
Bitter			X													
Acidic																
Spicy																
Sweet				X	X	X										
Mild				X												
Tasty	X				X											
Rotten																
Hot																
Stale																
Peppery																
Yummy												X				
Fruity									X		X		X			
Delicious				X		X							X			
Scrumptious														X		
Flavourfull			X		X			X		X		X		X	X	X
Tasteless	X				X	X	X	X	X	X	X			X	X	X
Duiscusting			X		X				X			X		X	X	X
Crispy	X														X	

15/6/2023

I decided to use the table above to create a graph. I first created a grid of tastes, removing the tastes that were not detected at all in all samples (to save space), and then counted up the total number of times each taste was detected for each bottle. This created a new table with aggregated results.

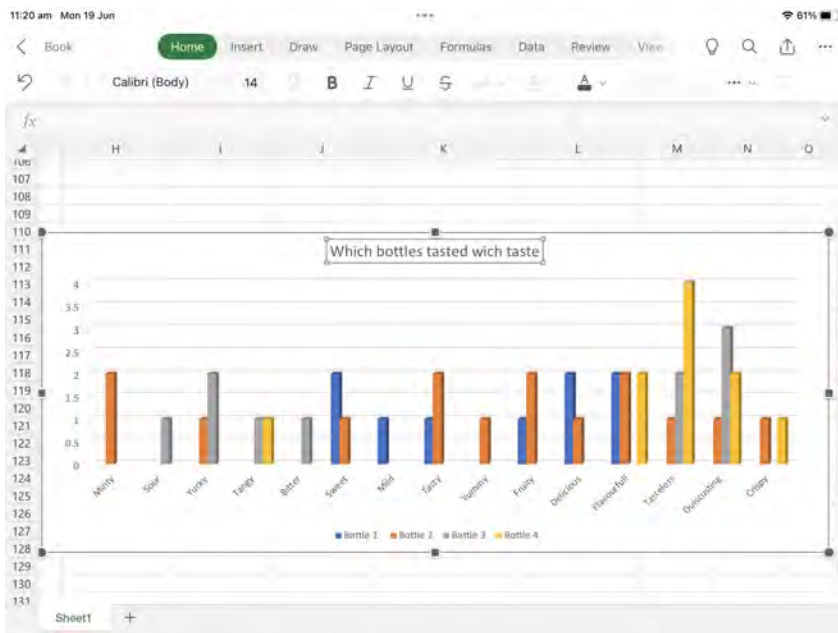
	Bottle 1	Bottle 2	Bottle 3	Bottle 4
Minty			2	
Sour				1
Yucky			1	2
Tangy				1
Bitter				1
Sweet		2	1	
Mild		1		
Tasty		1	2	
Yummy			1	
Fruity		1	2	
Delicious		2	1	
Flavourfull		2	2	2
Tasteless			1	2
Duiscusting			1	3
Crispy			1	1

Then I created a graph, showing the tastes and the bottles that tasted those tastes and a minute later, I decided that that graph was too confusing for the human mind to conquer in 1 second. I thought about how to make this graph more clear. To aggregate it even further, I decided to split all tastes into three groups: pleasant, unpleasant and neutral.

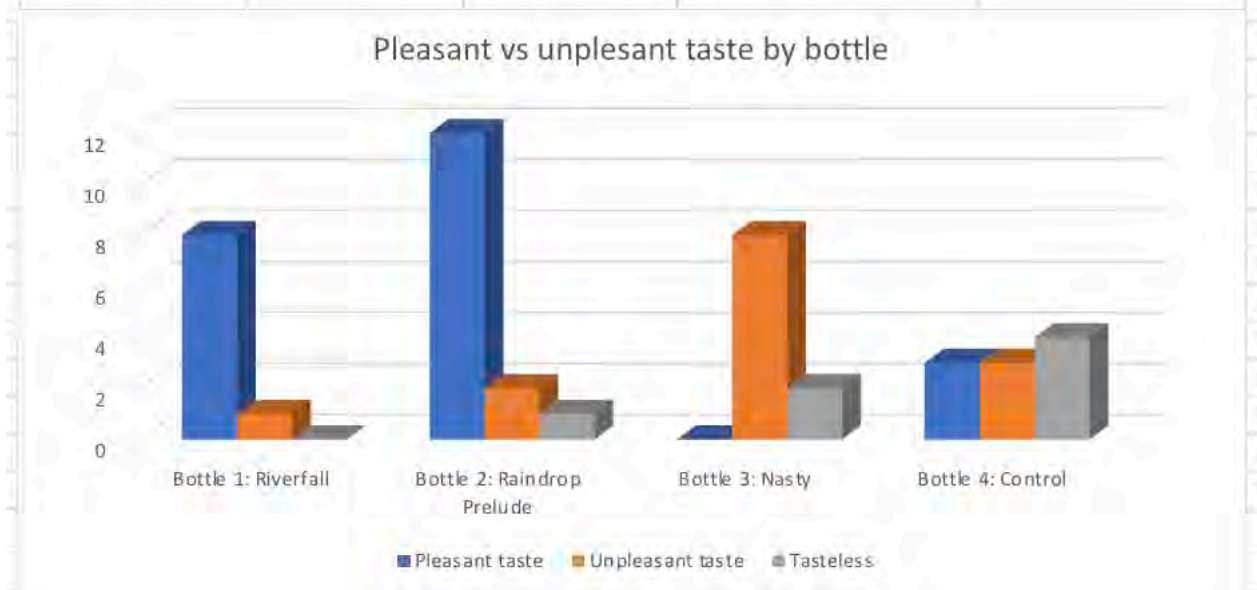
Pleasant: minty, sweet, mild, tasty, yummy, fruity, delicious, scrumptious, flavourful and crispy.
 Unpleasant: salty, umami, sour, yucky, tangy, bitter, acidic, spicy, rotten, hot, stale and disgusting.
 Neutral: tasteless, bland.

I then created a second graph showing how many pleasant, unpleasant and neutral tastes there were in each bottle.

19/6/2023
 I polished the graphs.



	Bottle 1: Riverfall	Bottle 2: Raindrop	Bottle 3: Nasty	Bottle 4: Control
Pleasant taste	8	12	0	3
Unpleasant taste	1	2	8	3
Tasteless	0	1	2	4



Bottle 1; that listened to Riverfall, had 8 pleasant tastes to 1 unpleasant taste. That means that approx 88% was pleasant, and 12% unpleasant. It was mostly pleasant.

Bottle 2; that listened to Raindrop Prelude, had 12 pleasant tastes to 2 unpleasant tastes and 1 neutral taste. That means that approx 80% was pleasant, 13.5% unpleasant and 6.5% neutral. It was mostly pleasant.

Bottle 3; that listened to Nasty, had 8 unpleasant tastes and 2 neutral tastes. That means that 80% was unpleasant to taste and 20% was neutral. It was mostly unpleasant.

Bottle 4; control bottle, had 3 pleasant tastes, 3 unpleasant tastes and 4 neutral tastes. That means that approx 30% was pleasant, 30% was unpleasant and 40% was neutral. It was mostly neutral.

That means that bottle 1 had the best and most pleasant taste, bottle 2 had the second best taste, bottle 4 had third to best taste while bottle 3, that listened to hard rock, was the least pleasant.

I did not think there would be such a drastic difference. What is the mechanism? Is it really just the sound and vibration of music changing the water? Maybe this is useful for people's health or just for sales of water. People could make their water and food listen to pleasant music and then drink/eat, and the sales might be higher because the taste is better.

I would really like to be able to test it on animals and humans. Does this vibration change the water enough to creat better health? Does the music change the water and fluids in the body the same way?

The next smaller step would be to use my cat and see if he can taste the difference and prefer the water from a certain bottle after listening to music. I could offer to him many bowls many times.

The good outcome of this experiment is that my own music makes water tastier, gives beautiful crystals and maybe it means that it has positive health effects.

Acknowledgement:

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