



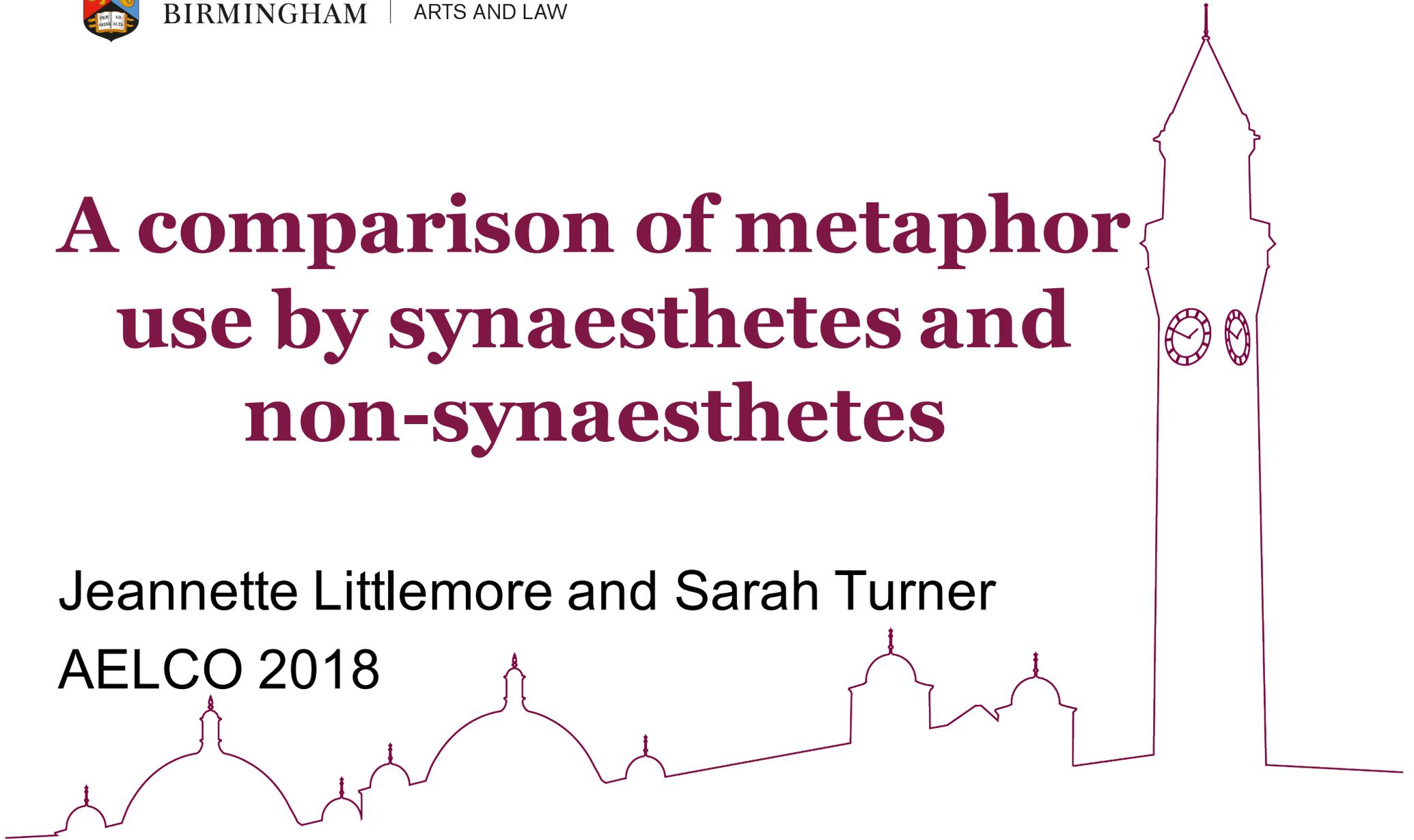
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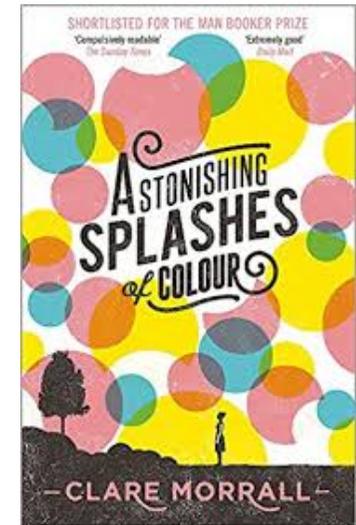
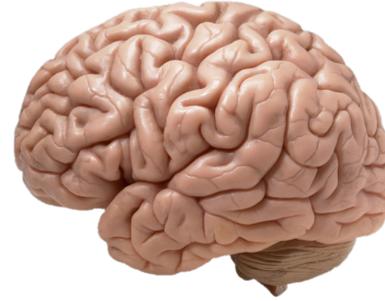
A comparison of metaphor use by synaesthetes and non-synaesthetes

Jeannette Littlemore and Sarah Turner

AELCO 2018



Synaesthesia



Amygdala ↔ Sensory Cortex

‘There are only certain times, when I feel right and he feels right. Then his white slows down so that all the yellows and blues and reds in his spectrum meet mine and merge, complementing the frenetic whirls of colour inside me. We look at each other and we match. Things can only work if we can share the colours out properly, evenly, between us’.

Astonishing Splashes of Colour, Claire Morrall, Tindall Street Press, Birmingham, p. 102

Ramachandran and Hubbard (2001)



Synesthesia



- ‘When ordinary stimuli elicit extraordinary conscious experiences’¹
- ‘More than a perceptual phenomenon’ – also conceptual²
- ‘Inducers’ and ‘concurrents’
 - ‘Concurrents arise unbidden in the mind’³

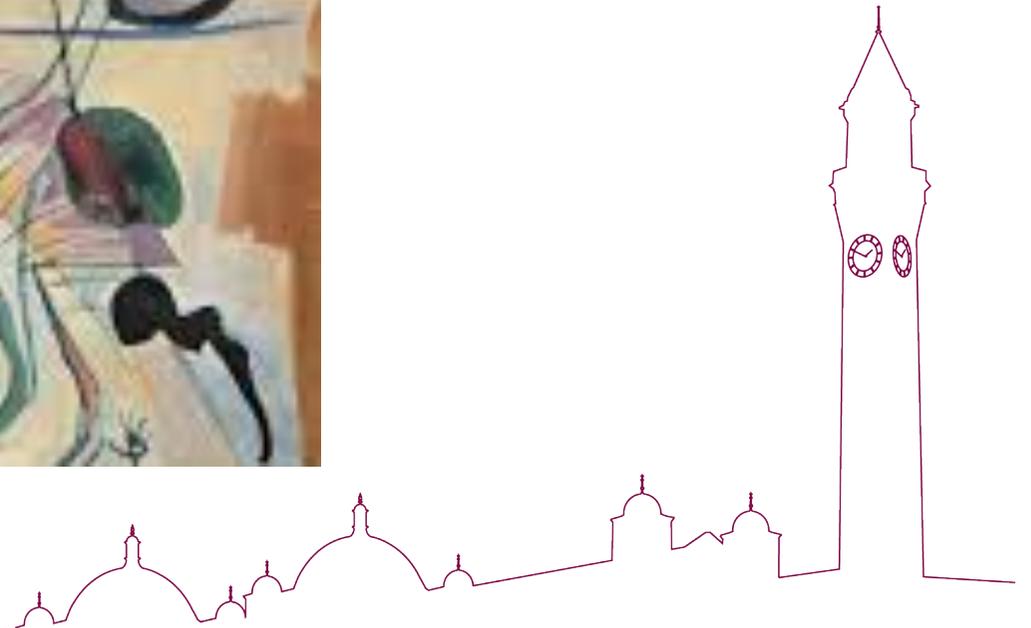
¹Bretones-Callejas, f.c.)

²Simner (2006)

³Grosenbacher and Lovelace (2001)



Kandinsky's 'Musical Overture'

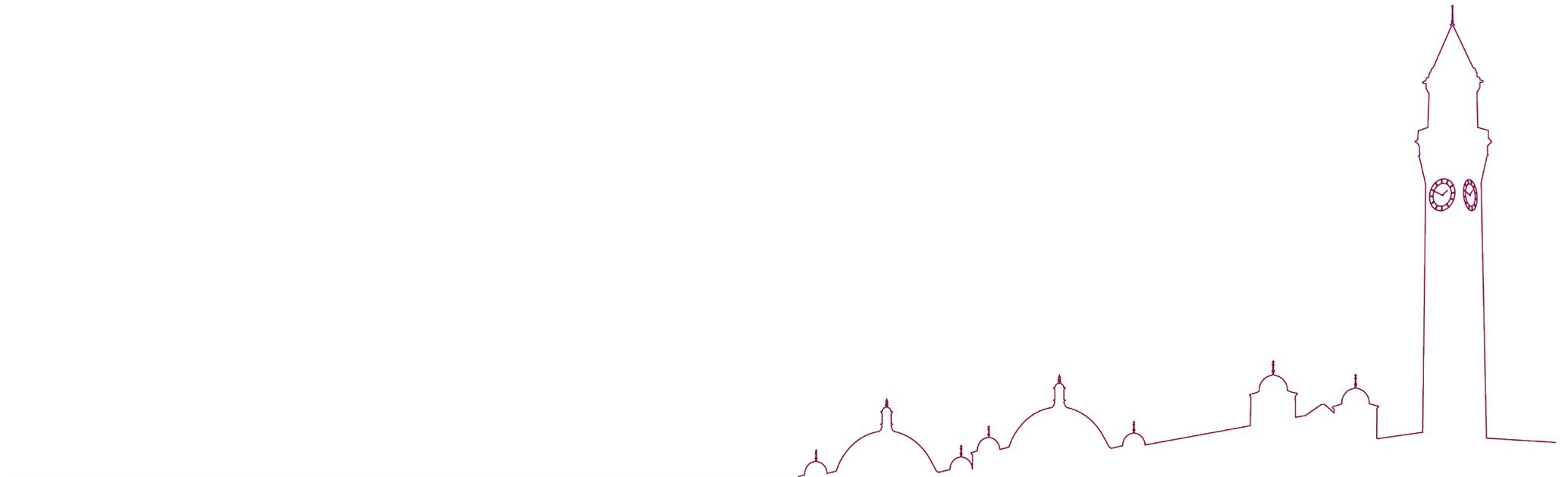


Synaesthesia and creativity



‘Synesthesia causes excess communication amongst brain maps. Depending on where and how widely in the brain the trait is expressed, it could lead to a propensity towards linking seemingly unrelated concepts and ideas

(Rachmachandran and Hubbard, 2008)

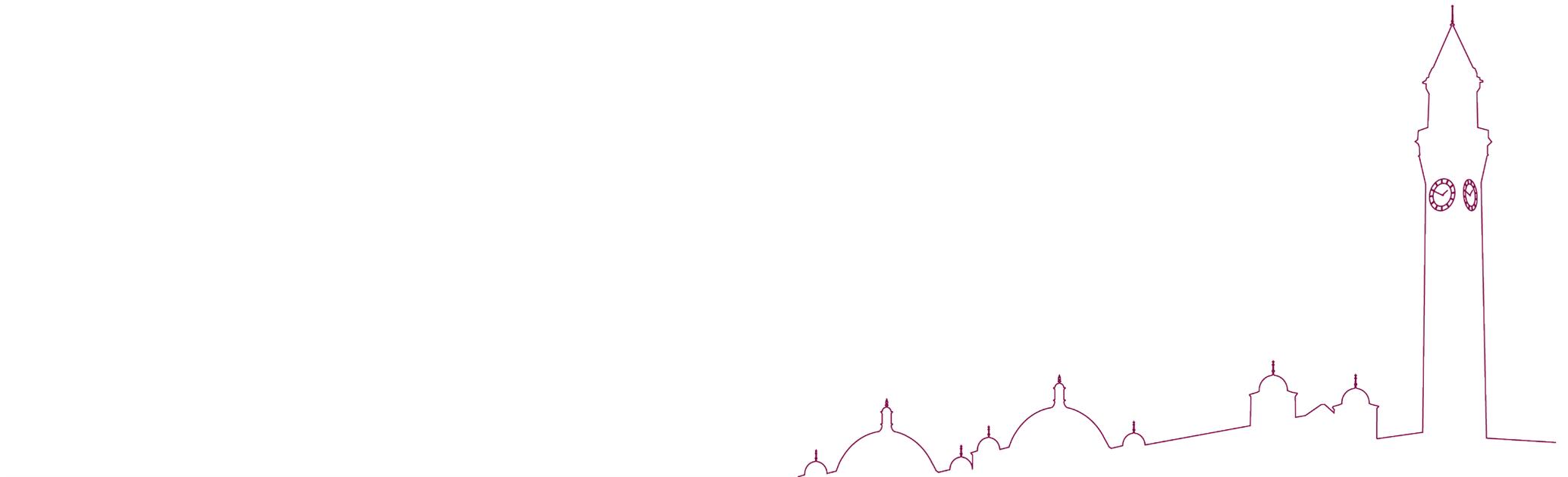


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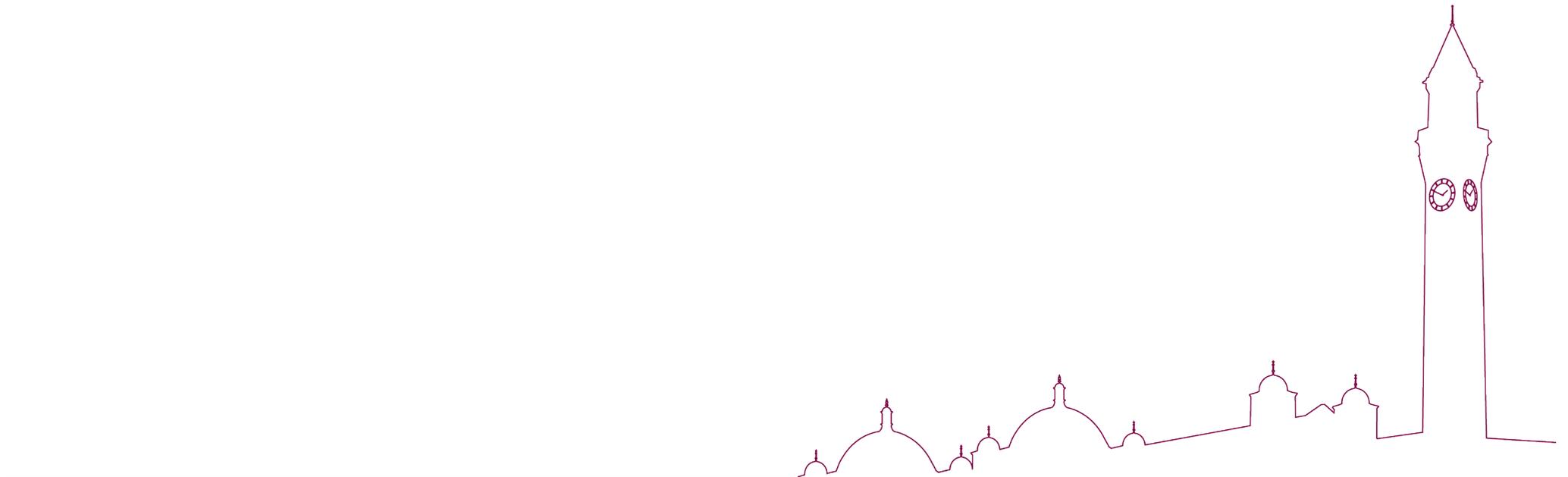


Synaesthesia and creativity



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Synaesthesia and creativity

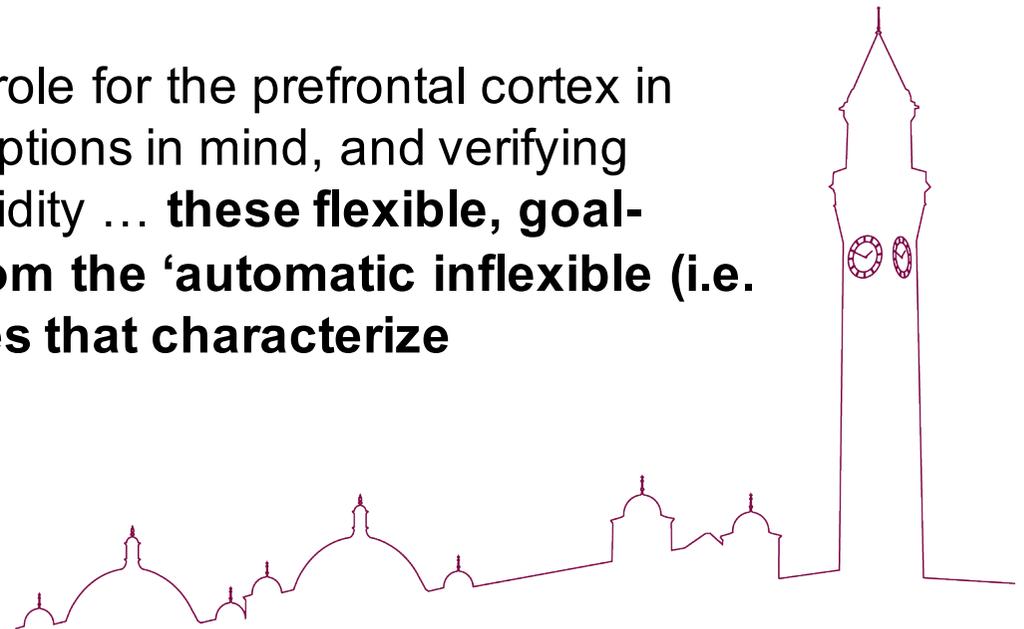


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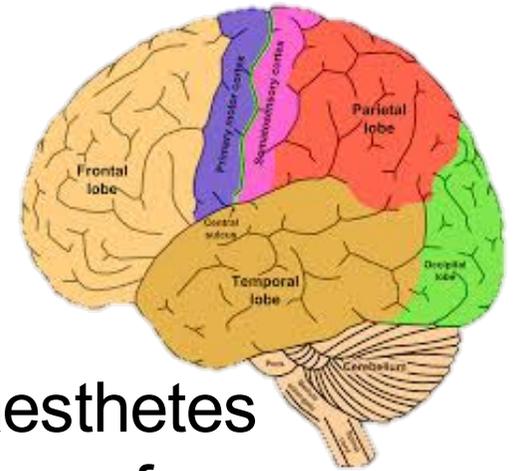
(Rachmachandran and Hubbard, 2008)

Recent work has identified an important role for the prefrontal cortex in developing retrieval strategies, holding options in mind, and verifying whether novel associations have any validity ... **these flexible, goal-driven processes are very different from the ‘automatic inflexible (i.e. consistent), stimulus-driven processes that characterize synaesthesia’**

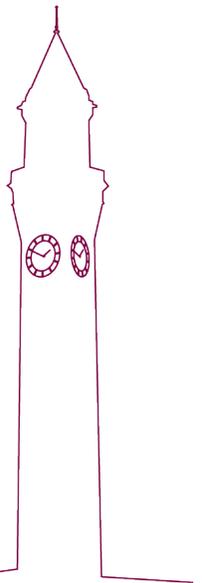
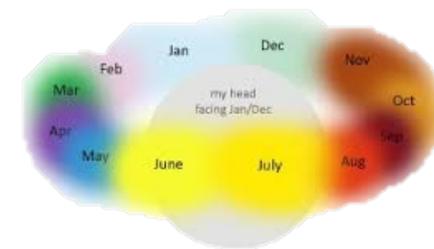
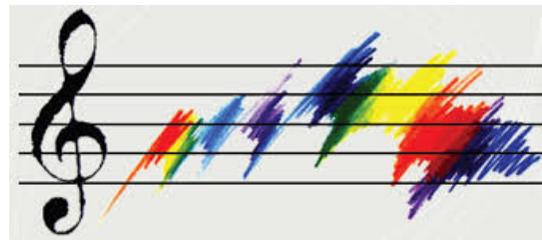
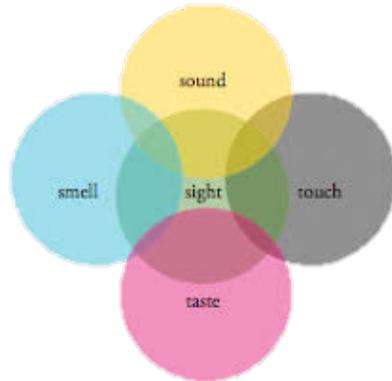
Ward et al. (2008)



Synaesthesia



1. How do synaesthetes differ from non-synaesthetes in terms of their responses to and production of cross-sensory metaphor?
2. To what extent are their associations creative and/or motivated?
3. What if anything can their responses tell us about the mechanisms underlying 'creativity'?



Synaesthesia

**20 synaesthetes and
20 non-synaesthetes**



UK Synaesthesia Association

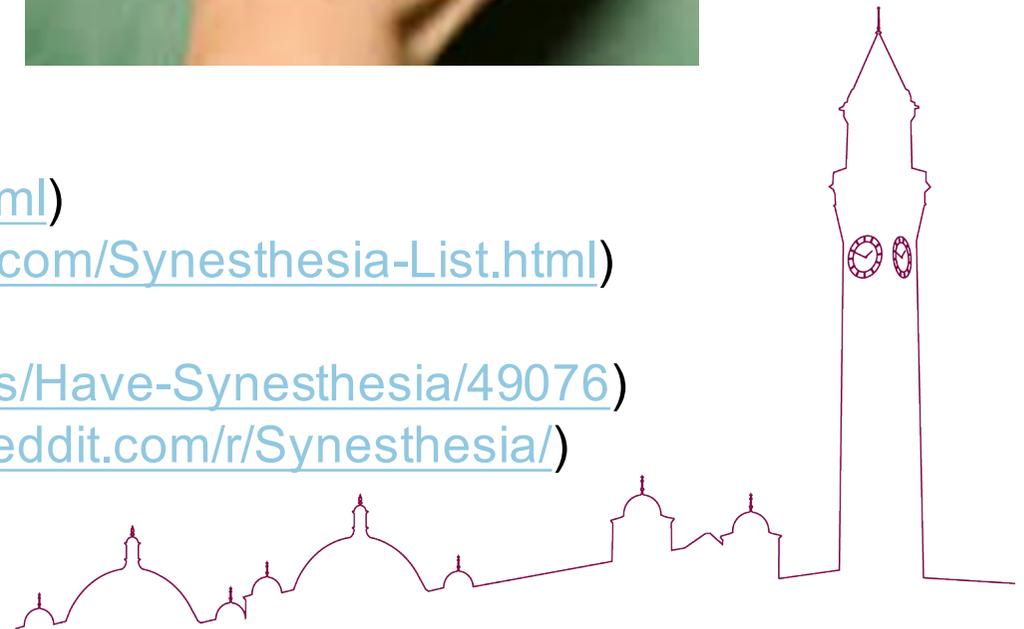
(<http://www.uksynaesthesia.com/index.html>)

The Synesthesia List (<http://www.daysyn.com/Synesthesia-List.html>)

The 'I Have Synesthesia' group

(<http://www.experienceproject.com/groups/Have-Synesthesia/49076>)

The Synesthesia subreddit (<https://www.reddit.com/r/Synesthesia/>)

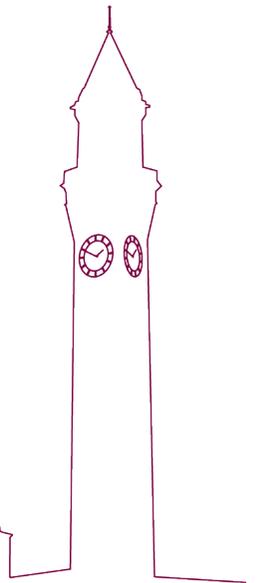


Synaesthesia



How literal?

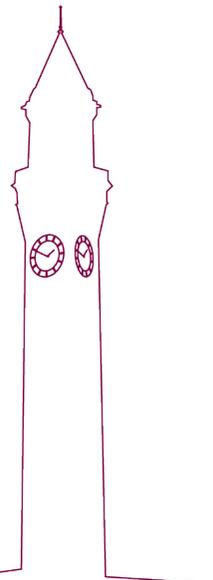
- “The sound of fingernails of a chalkboard set my teeth on edge”
- “Seeing those people again made my skin crawl”
- “It made me feel sick to see such meaningless cruelty”
- “Their constant excuses left a bad taste in my mouth”
- Significantly more ‘literal’ for synaesthetes ($p < 0.01$)



Synaesthesia

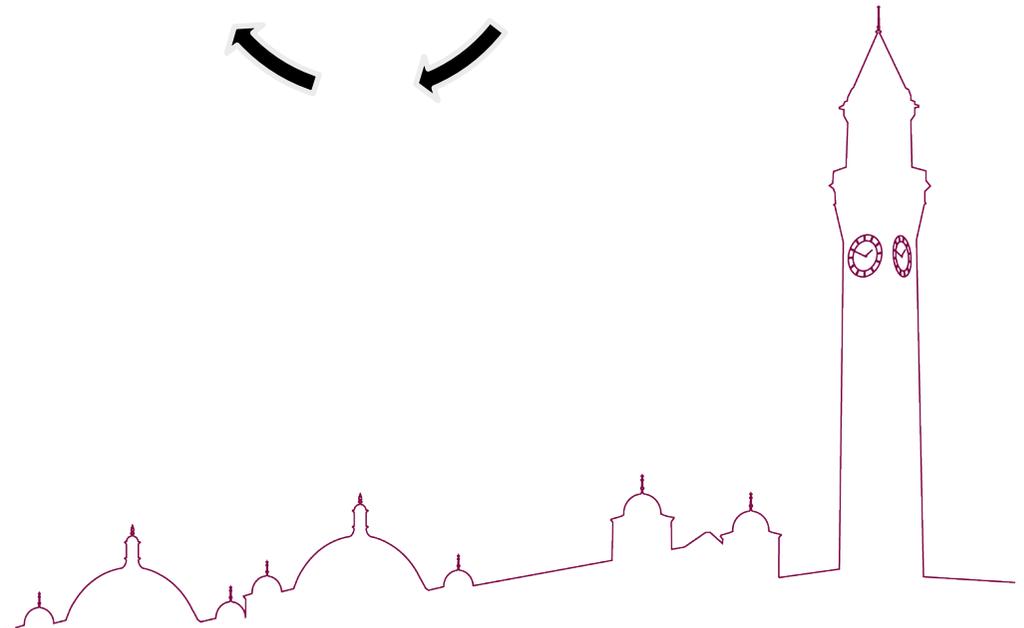
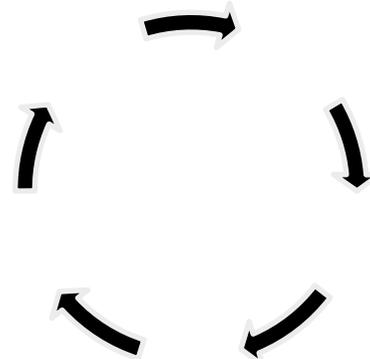
Write about something you like and something you don't like to...

- See
- Taste
- Smell
- Hear
- Touch



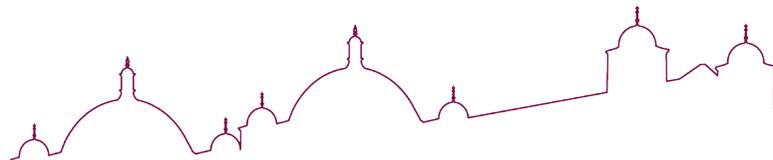
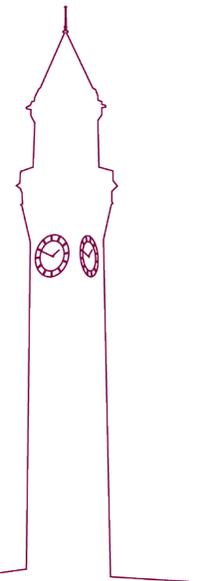
Responses coded for...

- Senses employed
- 'Creative' metaphor
- Reference to emotions
- Personification
- Empathy
- Hyperbole
- Types of metaphor
 - Container
 - Light and dark
 - Cleanliness
 - ...



Comparison of Response Types

Synaesthetes	Non-synaesthetes
Employed all five senses	Employed only sense of touch
Made more use of creative metaphor (22)	Made less use of creative metaphor (2)
Made more references to emotions (107)	Made fewer references to emotions (64)
Made more use of personification (20) and empathy (6)	Made less use of personification (5) and empathy (0)
Made extensive use of hyperbole (8)	Made very little use of hyperbole (0)
Provided fewer literal responses (24)	Provided more literal responses (70)

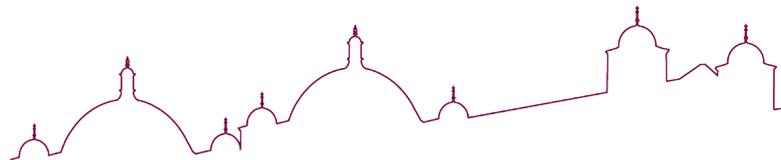
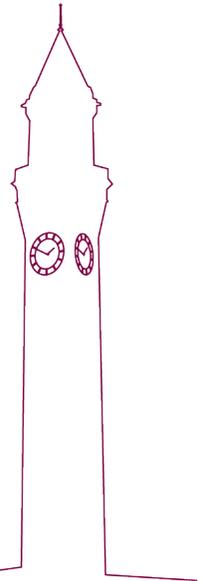


Synaesthetes' Responses



□ Creative metaphor

- I don't like some types of Hershey's chocolate because *they taste like how ripped up tires look*.
- I stepped on a pile of wood grubs that were under a piece of wood. *They poured like tiny balloons filled with mashed potatoes*. I only felt the sensation of them popping through my shoe, but it almost made me throw up. I rarely get nauseous from something like that.

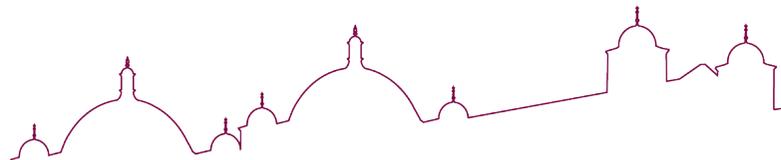
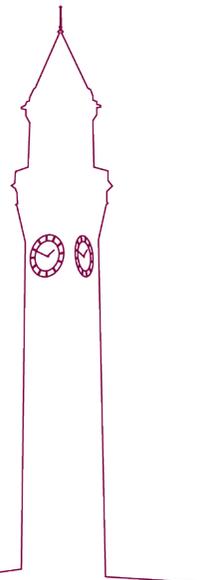


Synaesthetes' Responses



□ Creative metaphor

- [A song] I listened to the other day, the background music was annoying like a twitch or like trying to zip an old metal zipper that keeps getting caught. However, the singer's voice was warm and soft, like pushing around fine grey sand, and when the harmonies came in during the chorus, it was like the sand was being poured over your hands.

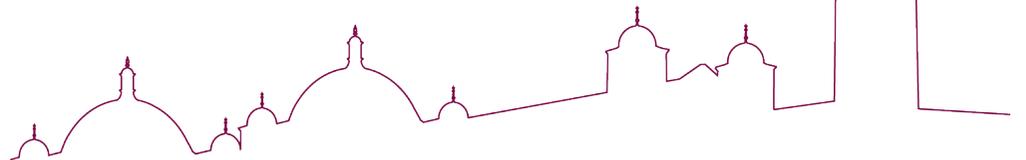
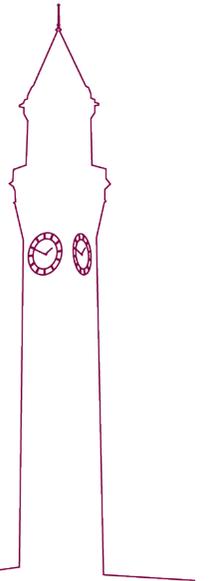


Synaesthetes' Responses



□ Emotional

- *I don't like to look at baby carrots for too long. They remind me of obesity. They're too smooth, and I do not like the little ridges. I'm not joking, sometimes the images of carrots keep me up at night. It's been this way since I was little. I was always afraid of becoming fat, and I guess it manifested itself in the texture of baby carrots.*
- Very high-pitched noises. *These terrify me.* If any of my skin is left uncovered when I hear these sounds, I **NEED** it to be covered immediately.



Synaesthetes' Responses

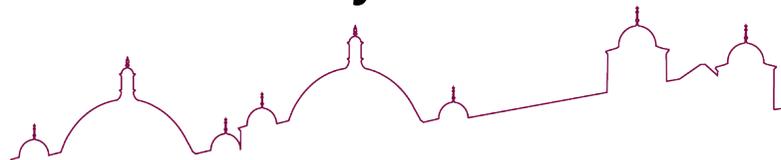
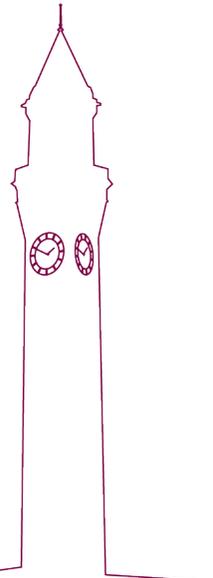


□ Conflation of several senses

- His voice *melts my mind and makes me warm ... it looks like deep dark colours* and it is my favourite sound.

□ Activation of colours

- *Vacuums make me see so much red* it's actually a little uncomfortable.
- I hate the flute. So much. I don't like how airy it is. I get lightheaded thinking about it. *The color of the sound is a terribly obnoxious baby blue.*



Synaesthetes' Responses

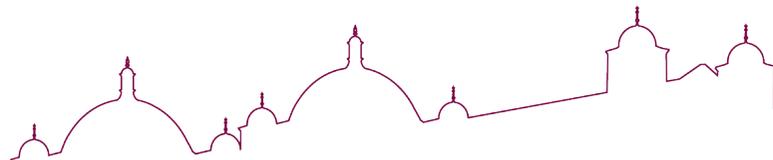
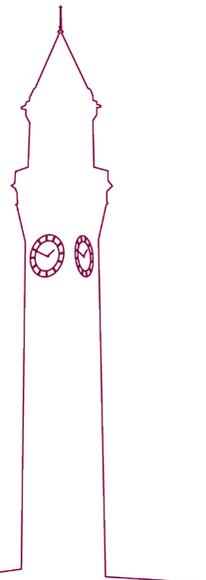


□ Personification

- The waves seem *angry* and I do not trust them
- Lemons. *Lemons need to chill out.* Eggs and cheese. Feels fake. Anything too bitter, for obvious reasons.
- Water which is flavored, but only slightly. *What are you? Are you water or are you flavored water? Pick something!*

□ Empathy

- The reason this is enjoyable is that it helps to 'empathize' with things that most people probably wouldn't even know you could empathize with; *yellow street-lines, beehives, computer monitors, etc.*

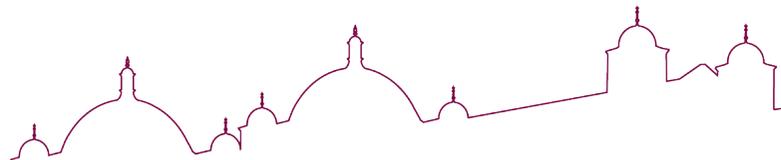
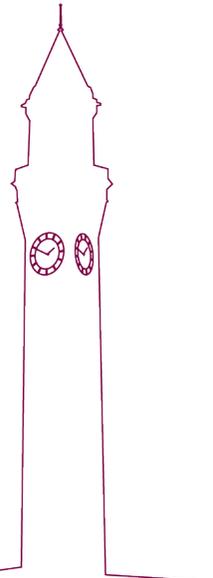


Synaesthetes' Responses



□ Juxtaposition of abstract and concrete phenomena

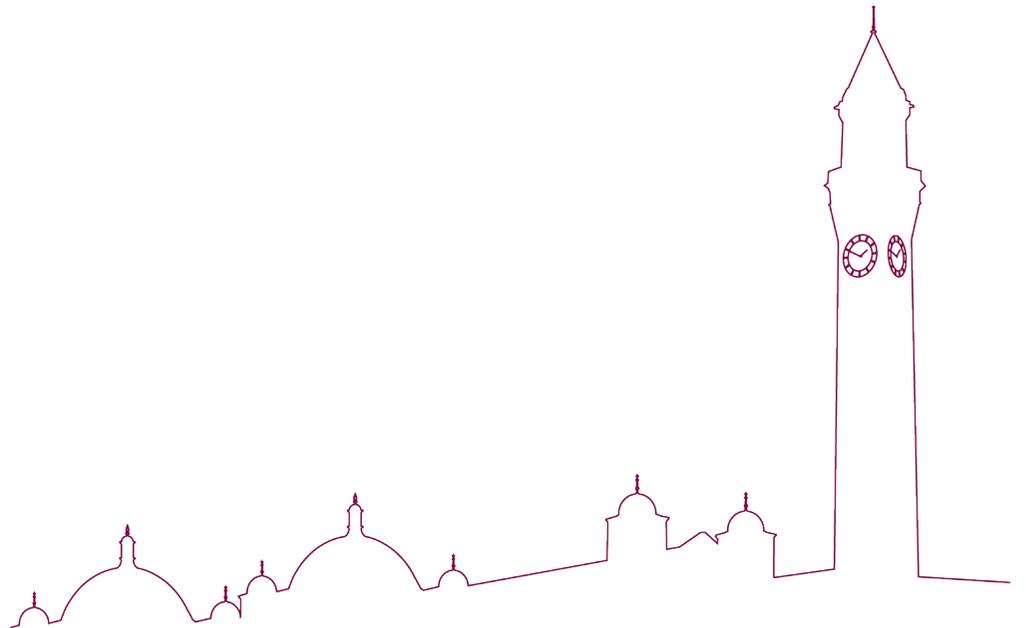
- Pickled beets taste like death. Raw mushrooms *are like eating sliced sponges*, and cooked mushrooms *are like slimy slugs*.
- Those cookies tasted of *regret and rotting flesh*.



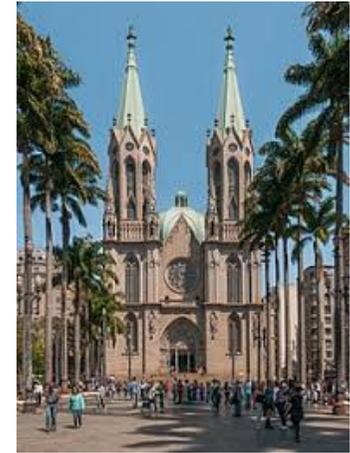
Synaesthetes' Responses

□ Metaphors involving touch

- Cellos. They remind me of childhood when I would slide across ice on my tummy. So smooth, with resistance.

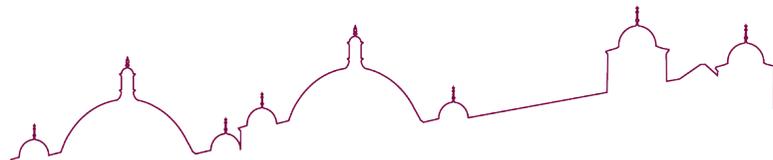
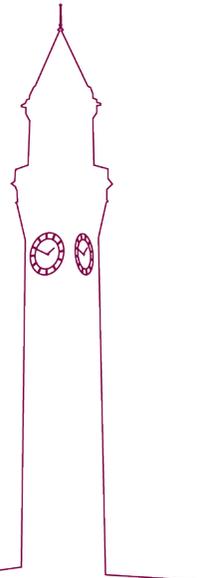


Synaesthetes' Responses



□ Metaphors involving structure

- I love classical music, esp. the music of Bach in any form, orchestral, violin (not crazy about the harpsichord.) It is an almost perfect "geometry" of melody, form, orchestration, chordal support and is magnificent in its structure. It reminds me of a large, beautiful cathedral - magnificent in its structure, beautiful in its lines, gorgeous in all the small, intimate details. And it tells the story of the human heart and its vast array of emotions.

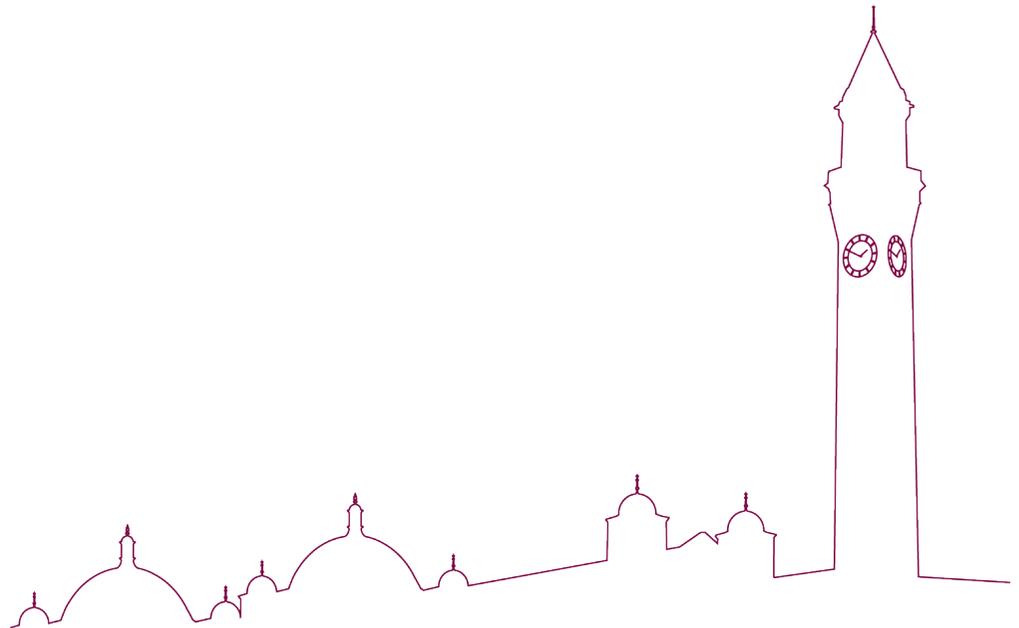


Synaesthetes' Responses



□ Hyperbole

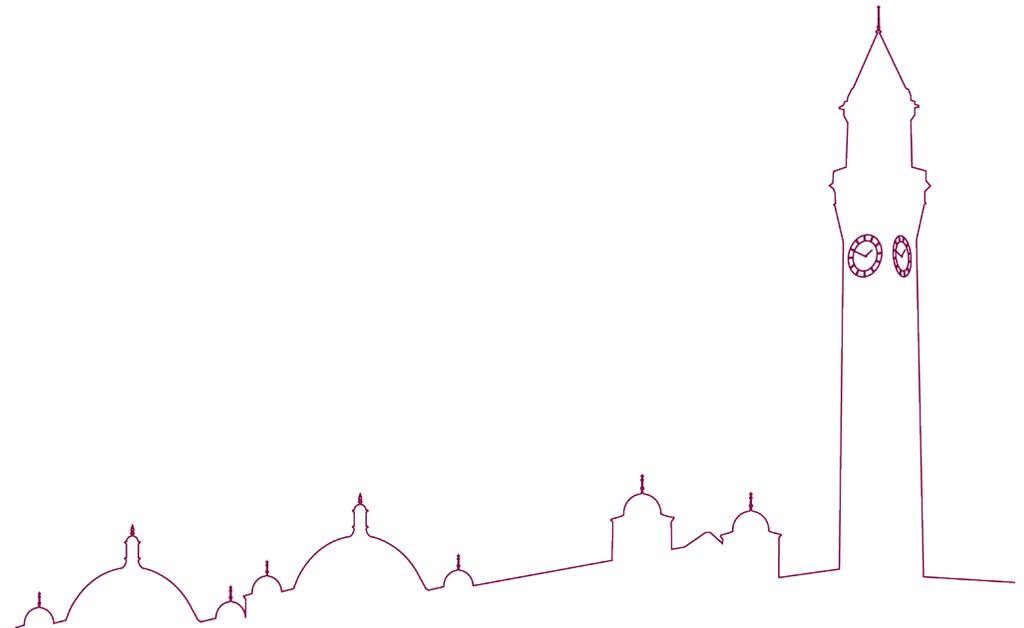
- I don't find the smell of bananas repulsive, but if I remain in the same room with one for more than an hour, it drills into my skull and overwhelms me.



Synaesthetes' Responses

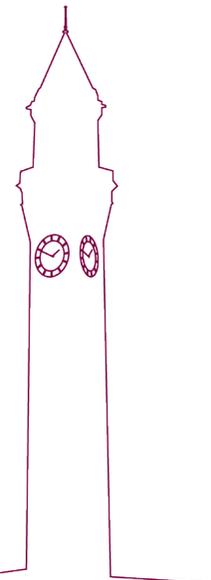
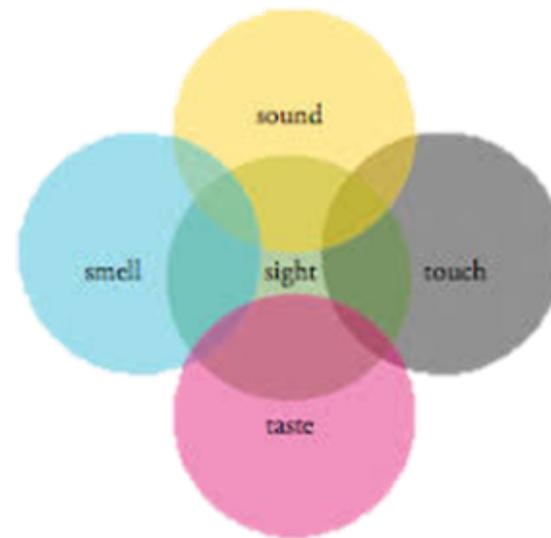
□ Hyperbole

- Certain shades of yellow ... are a person ... they're revolting. A very obese male, around maybe 500-700 pounds, sat on a bed which he's unable to move from, covered in sweat and grease and food. It actually makes me gag a little...



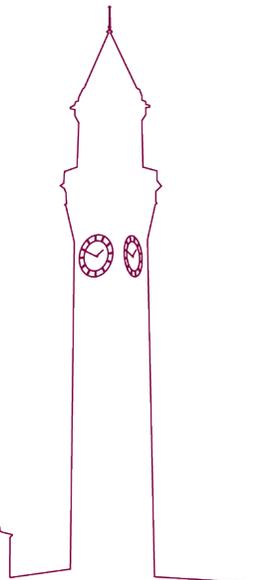
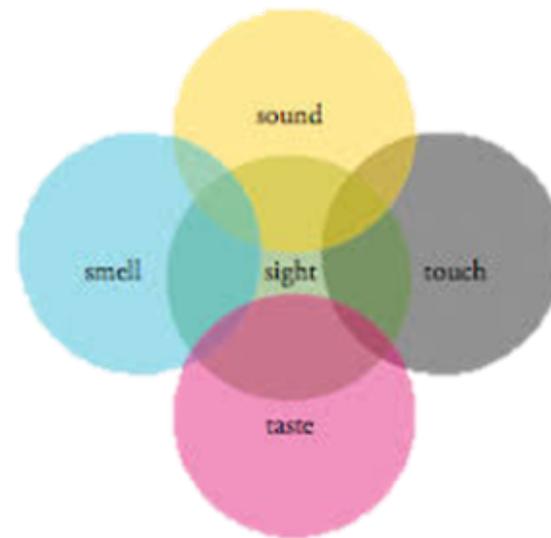
Responses by synaesthetic participants were more...

- creative
- metaphorically motivated
- colourful (in a literal sense)
- personal
- empathetic
- emotional
- physical
- hyperbolic



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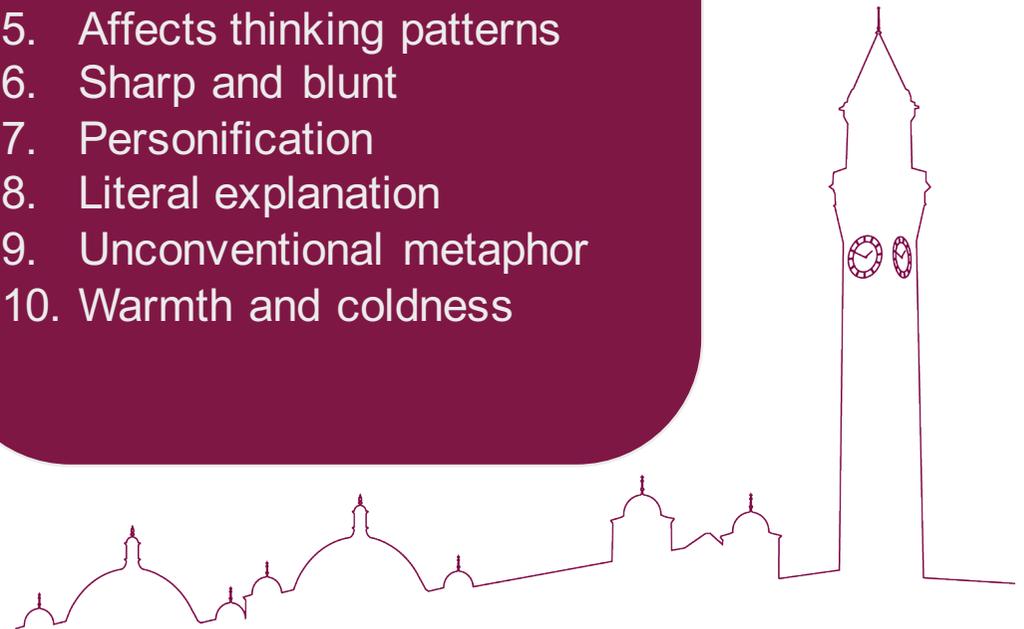
Positive and Negative

Positive

1. Emotional response
2. Reply sight
3. Reply touch
4. Physical response
5. Association
6. Colour
7. Literal explanation
8. Unconventional metaphor
9. Smooth and rough
10. Personification

Negative

1. Physical response
2. Reply touch
3. Emotional response
4. Reply sight
5. Affects thinking patterns
6. Sharp and blunt
7. Personification
8. Literal explanation
9. Unconventional metaphor
10. Warmth and coldness



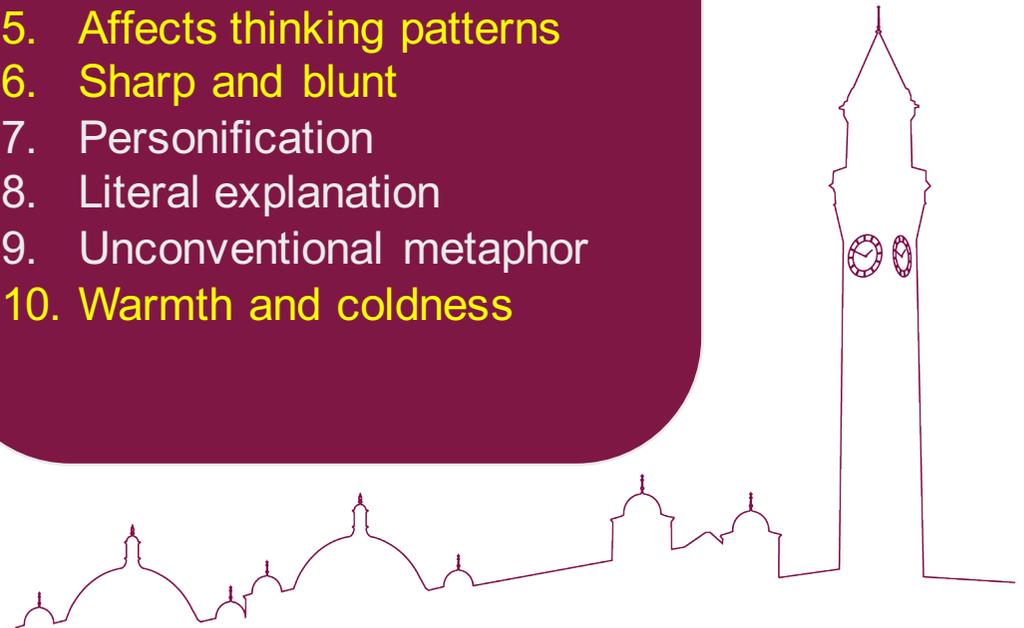
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Synaesthesia and creativity



- Synaesthetes better at creative thinking than non-synaesthetic individuals¹ and this manifests itself in a range of activities including art, language and music²
- Synaesthetes with auditory-visual synaesthesia show significantly more brain activation in the inferior parietal cortex during sound perception, than non-synaesthetes³
 - *This area is involved in multi-modal integration, the perception of emotions in facial stimuli, and the interpretation of sensory information*

¹Dailey et al. (2010) ²Mulvenna (2013)

³Neufeld (2012)

