

Background

Chromesthesia: an audio/visual synesthesia in which sounds trigger visual sensations

Disputed Origins

Psychological

VS

Neurological

- Trained synesthesia
- Childhood associations

- Neonatal theory
- Autistic connections

Brain Structure

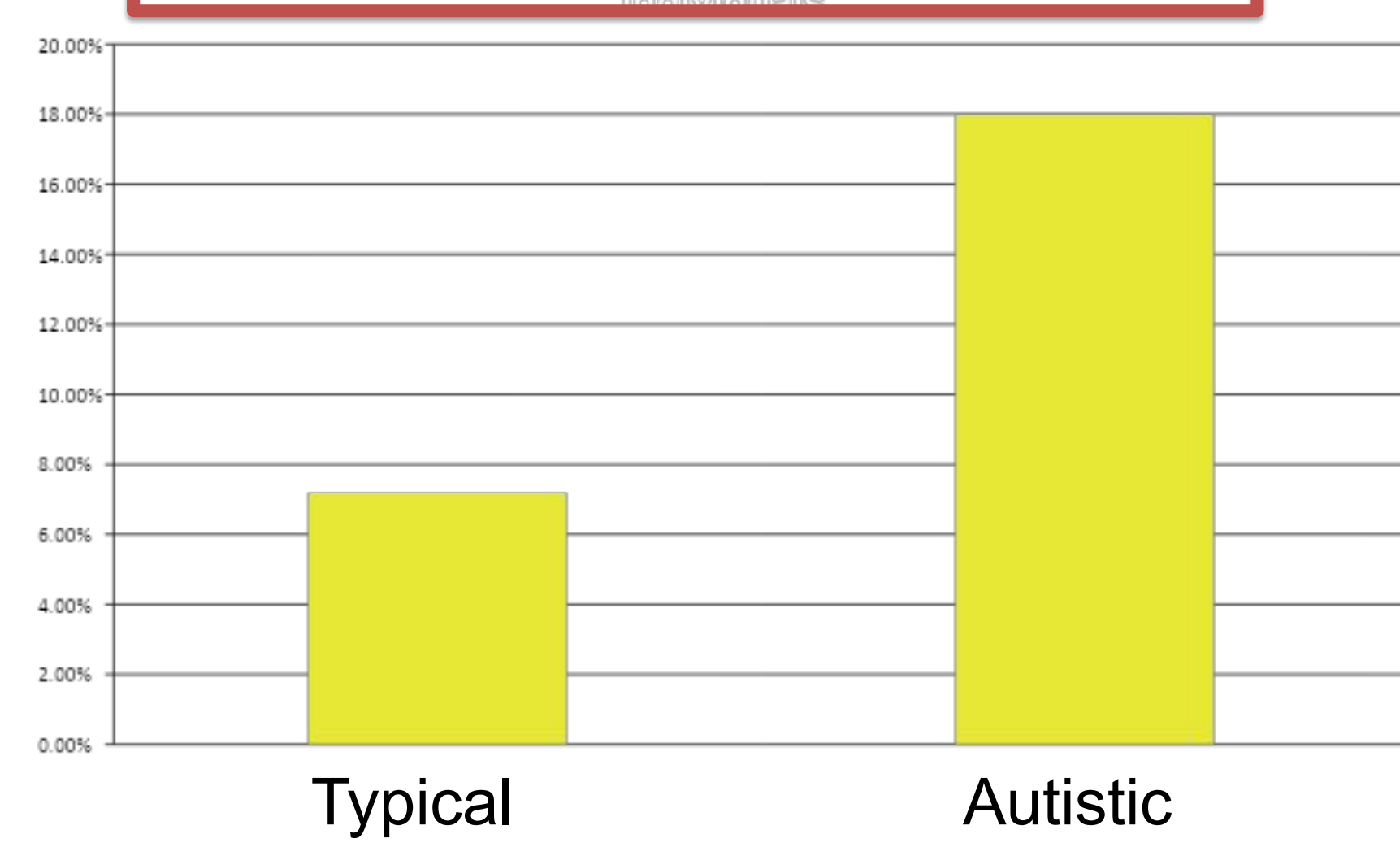
VS

Neural Connection

- Triggers based on vicinity
- Audio/ visual centers closer

- High neural connection
- Hyperactive parietal lobe

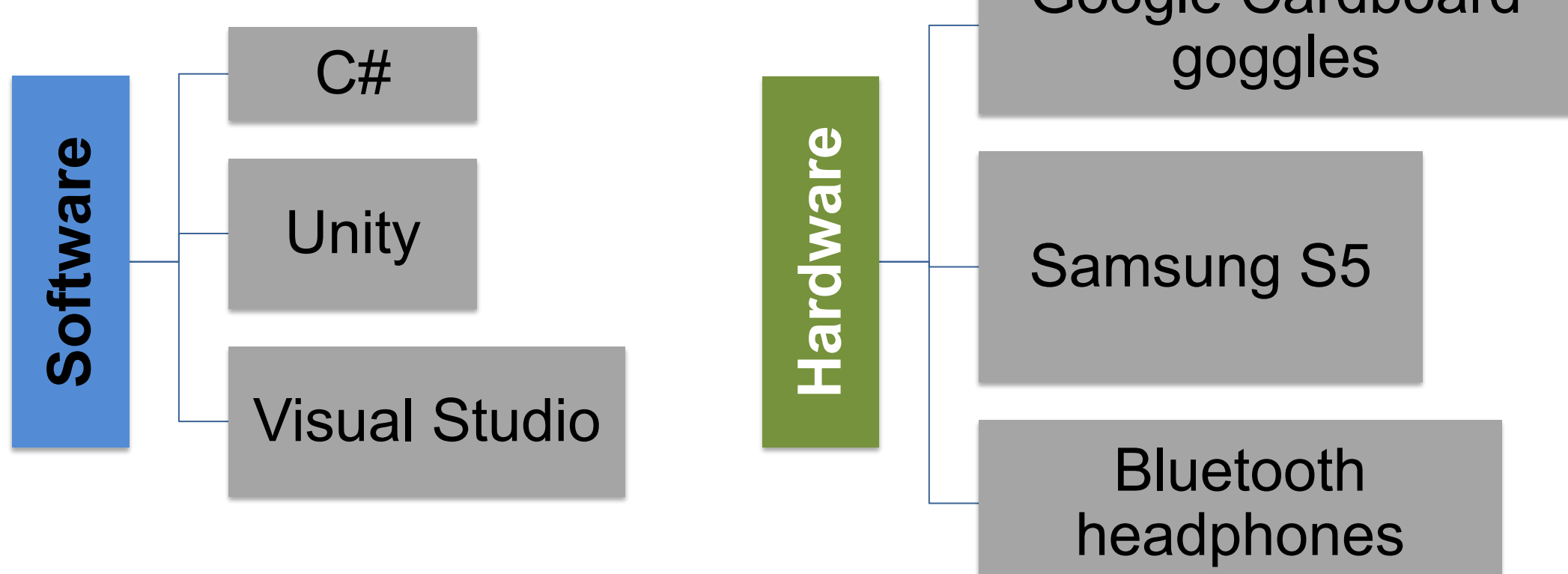
Prominence of Chromesthesia in Typical and Autistic Individuals



Problem Statement

Lack of visibility on lesser known disorders leads to ignorance of knowledge possibly capable of solving more pressing conditions

Materials



Simulating Chromesthesia Through Augmented Reality

Creating an immersive program delving into synesthetic neurological deficits and their impact on catalyzing research for medical advancements

Program Breakdown

Song Analysis

TITLE	GENRE	KEY	COLORS	BPM
Bye Bye Bye	Pop	A ♭ Major	Yellow, Red	173
Movin' Out	Classic Rock	D Minor	Yellow, Purple	134
All to Myself	Country	D ♭ Major	Purple, Blue	95
Last Nite	Indie	C Major	White, Red	104
Brandenburg Concerto No. 2	Classical	E Major	White, Green, Yellow, Red	97
Best Part	R&B	G Major	Orange, Green	75

Correlation of 3D Object and Tonal Trigger

CYLINDER

Mid Tones

SPHERE

Bass Tones

CUBE

High Tones

Hexidecimal Determination

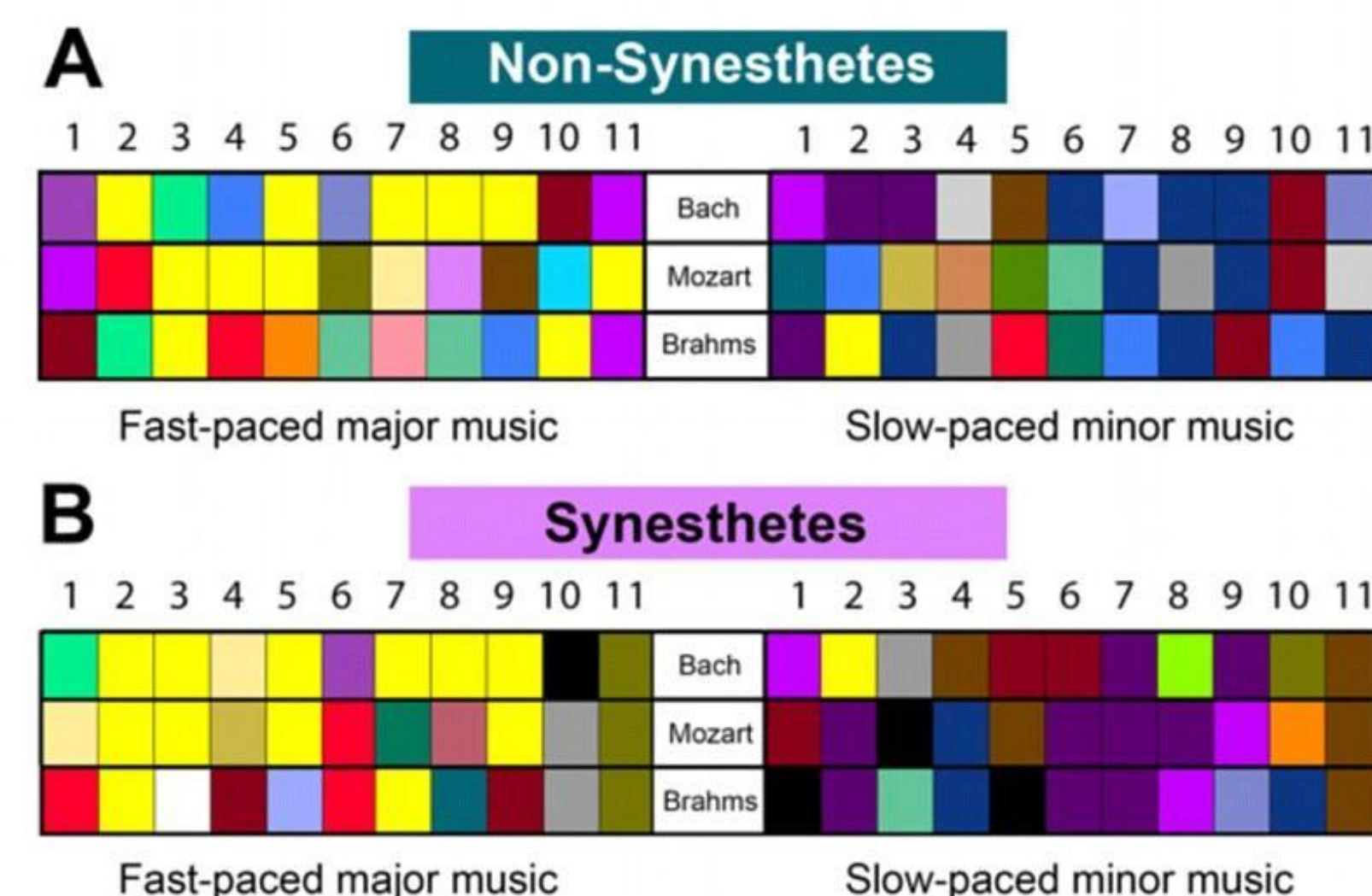


Photo by WimTeach and WimLearn

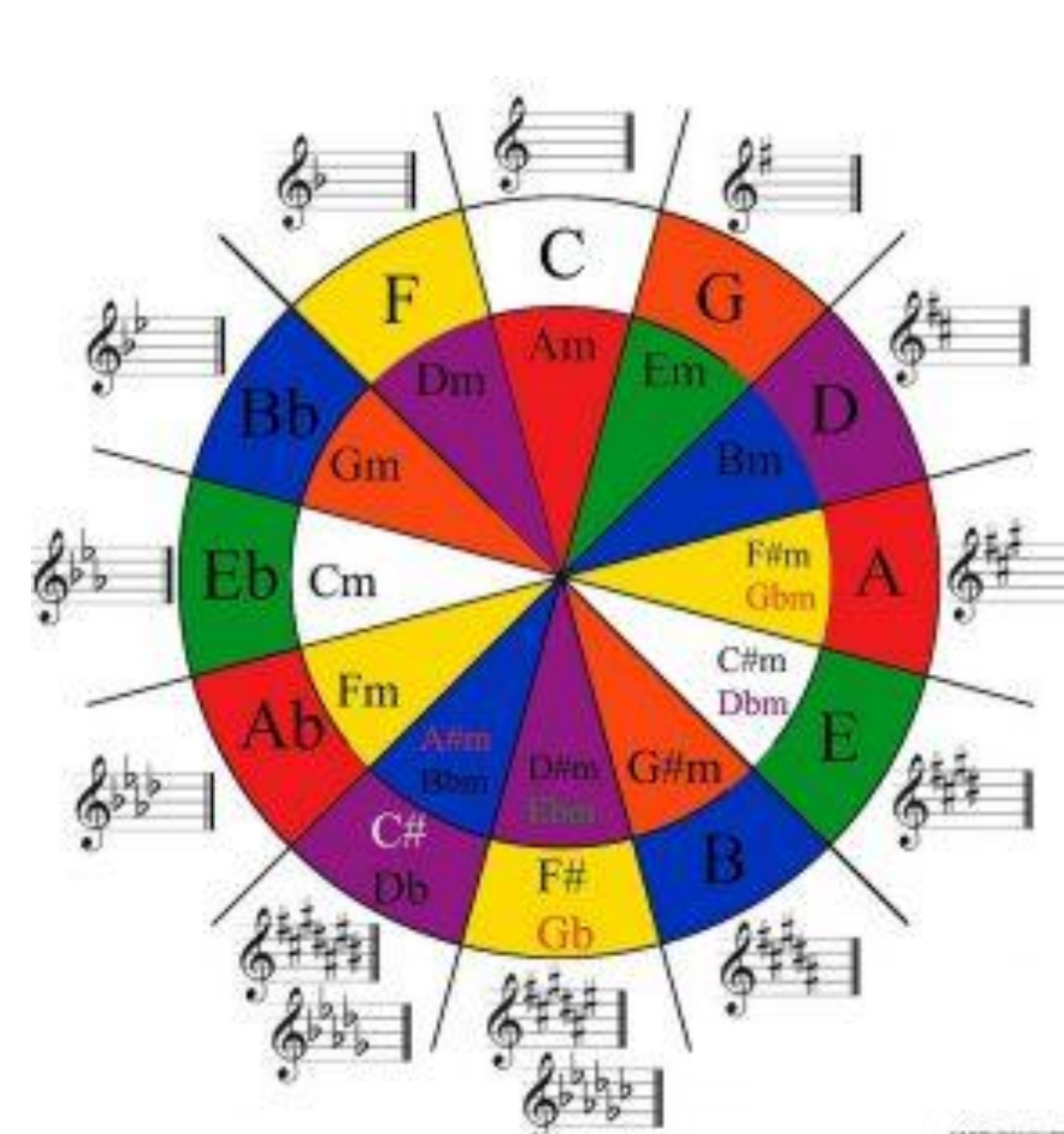


Photo by Daily Mail

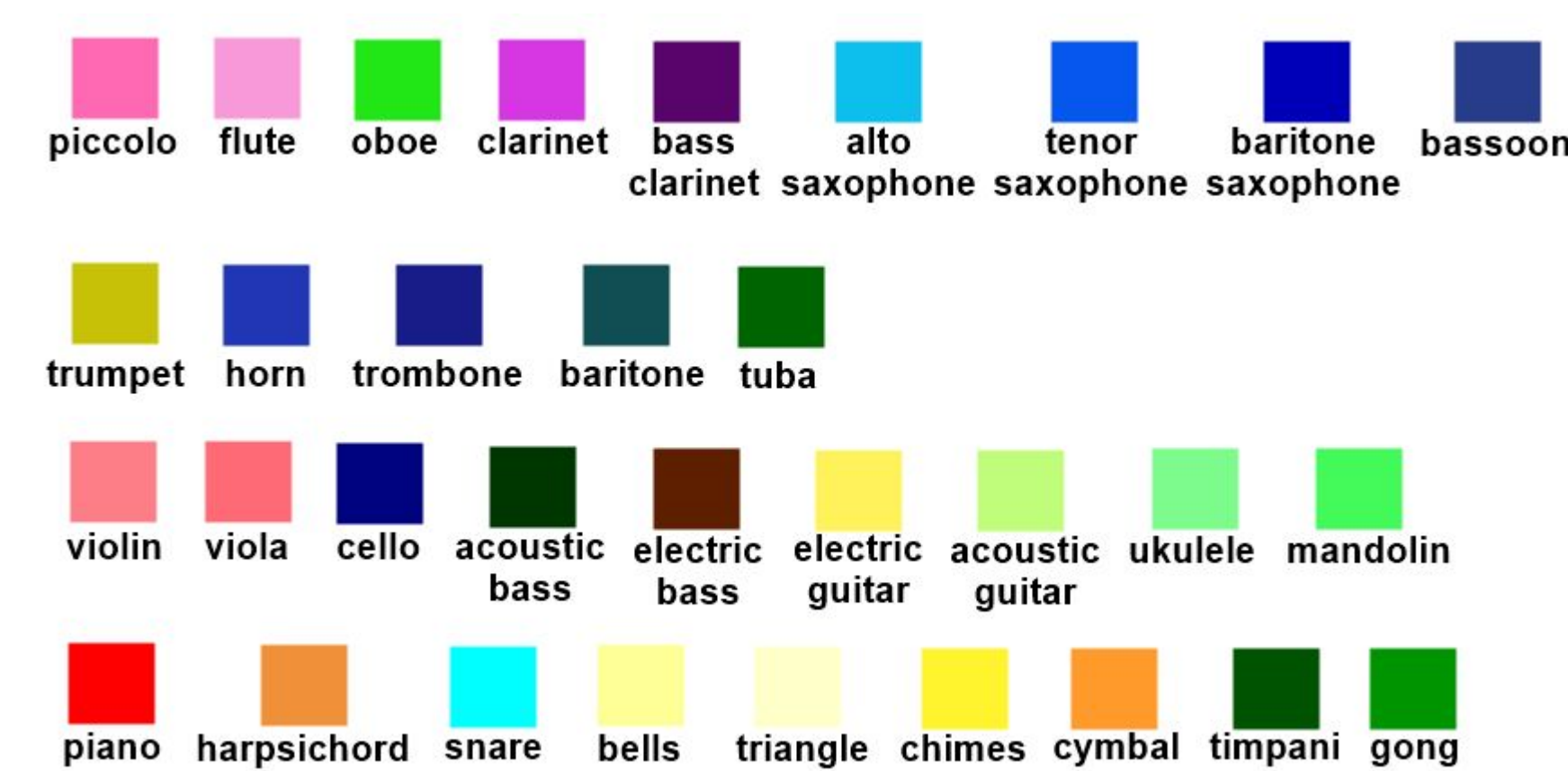
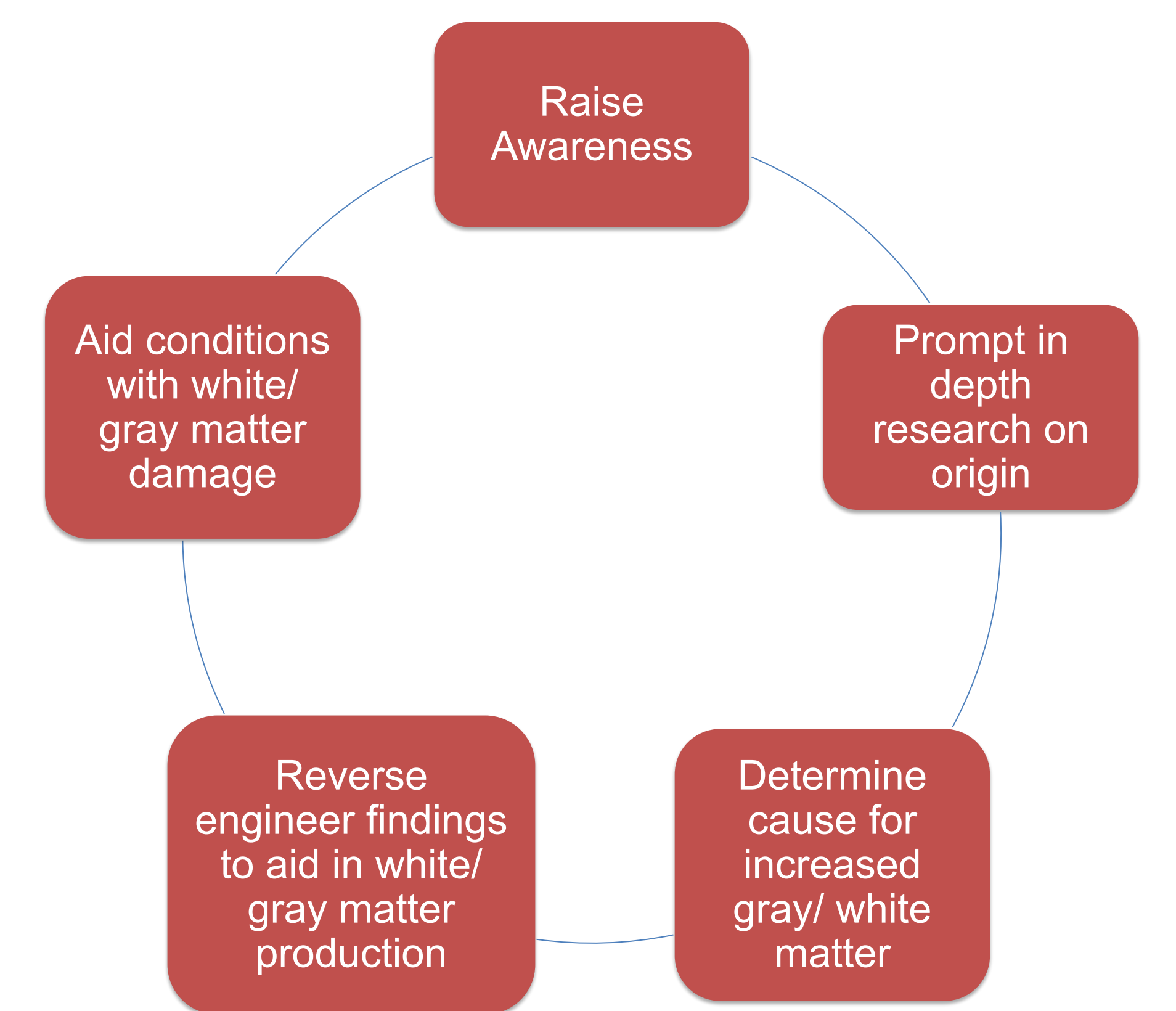


Photo by Reddit

Program Application



White/ Gray Matter Impact

White Matter

Sending nerve signals

Reflexive reactions

Movement

Gray Matter

Muscle weakness/ Paralysis

Motor skills

Interpreting sensory information

Damage to White/ Gray Matter

Spinal cord injury

Intracerebral hemorrhage

Future Work

Programming

- Adding more musical facets as triggers
- Displaying different chromesthetic visuals
- Using tactile VR to simulate different synesthesias
- Allowing user to input song

Biological

- Determining if synesthesia is structural or due to hyperactive parietal lobe
- Determining reasons behind increased white/ gray matter density
- Researching how to better redress infirmities caused by brain matter damage