Stimuli In = Action Out?

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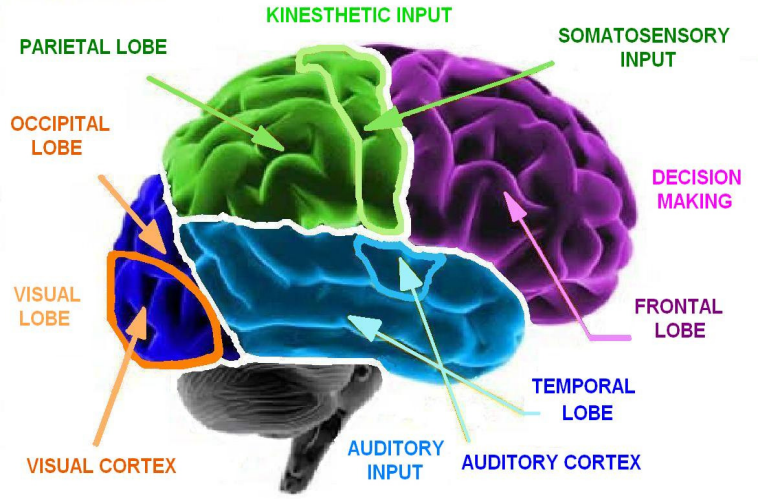
Background

Information enters the human consciousness when senses input stimuli into the sensory lobes of the brain's cerebral cortex. Visual input enters the occipital lobe and is processed in the visual cortex. Auditory input enters the temporal lobe and is processed in the auditory cortex, and kinesthetic input enters the parietal lobe and is processed in the somatosensory cortex [(1)]. (see Figure 1)

Figure 1: Brain Lobes and Sensory Cortexes of the Cerebral Cortex



A common neuromyth states that every person has one particular sensory cortex that processes sensory stimuli faster or better than the others. This dominant sense corresponds to a dominant learning style, preference, or modality. To date there is no neuropsychological or cognitive neuroscientific evidence to support this myth[(2)]. Due to the interconnectivity of all the lobes within the entire brain, no sensory lobe or cortex of the brain is actually neurologically dominant [(2)]. Therefore, your dominant sense is

simply a psychologically cognitive preference that may have a significant impact in the frontal lobe of the brain where the complex process of decision making occurs.

Purpose

The preferred dominant sense of a participant will be determined, and the effects of that preference on their conscious and unconscious decisions to act will be studied.

Hypothesis

It is proposed that your preferred dominant sense has an impact on both your conscious and unconscious decisions to act.

Procedure

After reading an informed consent letter that was preapproved by a Safety and Ethics officer for the WWSEF, the participants gave informed consent, and then performed three tests.

Test 1: The participants took a multiple choice questionnaire (see Table 1) to determine how they think they would consciously act in various driving situations.

Test 2: The participants took a 7 minute simulated driving test. A customized track through Los Angeles, California, was created in *Midnight Club II* on a PC. The route was set to include various types of land zoning such as residential, commercial and industrial, and the optional settings were selected to include bad weather such as rain and fog, high levels of traffic, and lots of pedestrians throughout the route. The test was completed using a Logitech Wingman Formula GP Racing Wheel with the foot

pedals. It was followed by a few questions about what the participants remembered about the test as well as some of the decisions they made during the test. The test was designed to input a lot of sensory stimuli into the brain so that decisions requiring action, in a short period of time, could be closely observed (see Table 2) in order to determine how the participants unconsciously decided to act.

Test 3: The participants took a multiple choice learning style questionnaire [(3)] (see Table 3) to determine their preferred learning style or dominant sense.

Table 1: Conscious Decisions Test Sample Questions

Example Question	Visual Response	Auditory Response	Kinesthetic Response
You're driving down a road when you hear a siren. The first thing you do is...	Look for the vehicle.	Identify the vehicle or its location.	Immediately pull over.
When you switch lanes, you first...	Check your blind spot.	Listen for other engine noises.	Flick on your blinker.
You realize that you have just run a red light, so you...	Try to remember seeing the lights.	Moan or groan.	Slow down.

Table 2: Unconscious Decisions Test Sample Observations

Visual Observations	Auditory Observations	Kinesthetic Observations
Was the look of the vehicle important?	Did they want to listen to music?	Was a comfortable chair important?
Did they follow the route/speed limits?	Did they talk during the test?	Did their eye movement go down when recalling the route?

Table 3: Learning Style VAK Test Sample Statements

Visual Statement	Auditory Statement	Kinesthetic Statement
I am good at drawing.	I am a good listener.	I am good at making things.
I often doodle in class.	I often sing or hum to myself in class.	I often fiddle with things in class.
I have a good memory for faces.	I have a good memory for people's names.	I am good at learning physical skills.

Each test was analyzed and the participants' dominant sense was calculated. The results from the three tests were compared to determine the participants' overall preference. This dominant sense was then used to calculate how much it affected the participants' conscious and unconscious decisions to act.

Results and Observations

The results show that your preferred dominant sense affects 42% of your conscious, and 44% of your unconscious decisions to act. This leaves the other two senses, if split evenly, each affecting only 28-29% of your decisions to act. To further confirm these results, it is recommended that a larger number of participants with a more varied demographic representation be tested on a greater variety of actions other than driving.

Conclusions

In conclusion, your preferred dominant sense really does affect both your conscious and unconscious decisions to act. This could be extremely important to the

retail sector of the Canadian economy, which represented over $415B in retail sales[4] or 6.2% of the GDP[5] in 2009. If retail salespeople could determine your preferred dominant sense by asking a few questions, they would be better able to convince you to purchase items by explaining the characteristics of their product that best influence your preference, thereby increasing profits. Further research by professional marketing and advertising researchers would be required to determine such questions and their effectiveness within specific markets of the retail sector. As well, most retail items could also be designed and advertised to gratify a customer's specific preferred dominant sense in order to make the products as desirable as possible. These innovative methods could actually strengthen the economy because, after all, stimuli in, does in fact, equal action out!

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Appendix

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