Electroencephalography and Reaction Time

Purpose

Electroencephalography is the study of the electrical activity of the brain. Superficial dendrites of the cerebral cortex are the sources of this activity. The thalamus establishes the synchrony of the electrical signals. Electroencephalograms are graphical records that measure brain wave activity. We will be able to identify the basic EEG patterns and no lower amplitudes and frequencies we will understand the areas responsible for generating different brain waves. We will understand the factors that determine the time it takes to completely reflex and understand the difference between monosynaptic and polysynaptic reference in the term of why they have different speeds.

Procedure

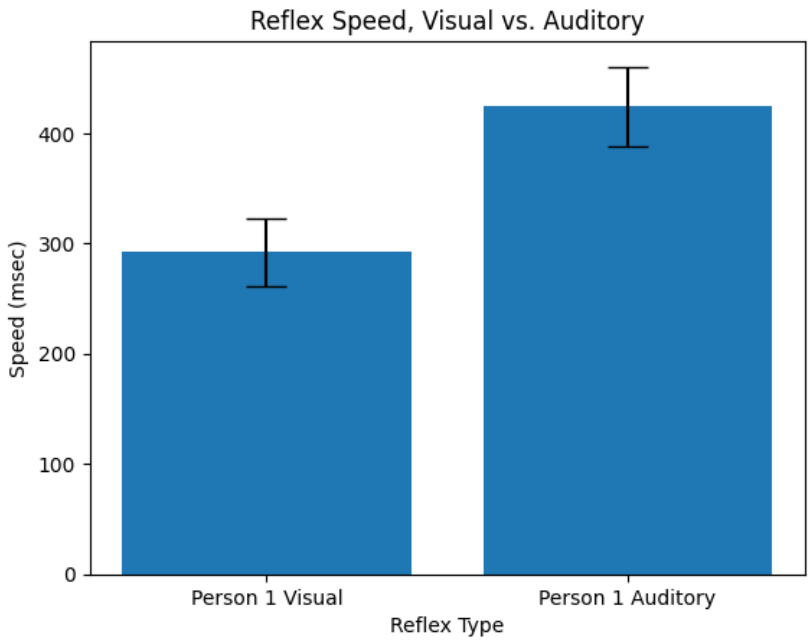
5-B

1. Once all students using your Iworx unit and laptop have reported their 5-A averages, arrange yourselves for 5-B according to this recording setup:
   - Turn the laptop so the subject can still press the "Enter" key but cannot see the screen. The subject's hand should be in a position so that they can press the "Enter" key as quickly as possible.
   - The lab partner holding the EM-100Event Marker close to one of the subject's ears should stand out of sight of the subject.
2. Type the subject's name and "Auditory" in the Mark box that is to the right of the Mark button just above the data recording. Then click the red "Record" button then click the Mark button, this will put a vertical line in your recording and the words in the Mark box at the bottom of the vertical line. Leave the cursor mouse over the Mark box (not Mark button).
3. Each time the lab partner clicks the Event Marker button near the subject's ear, the click should be audible to the subject. As soon as the subject hears the "click," they need press the "Enter" key as quickly as possible.
4. Like in 5-A, when this happens a small "Enter Mark Text" window will pop up, ignore it. However, the subject will have to click on the "Enter" key again to clear it. Do not worry, the Mark line will still be in the right place. The subject will have to hit the "Enter" key twice for every trial: once to leave the Mark line and a second time to clear the "Enter Mark Text" pop up window.
5. Repeat this for ten trials but the lab partner should be sure to click the Event Marker button at irregular intervals(not less than 5 seconds apart, but not more than 10 seconds apart). After ten trials, click the black "Stop" button.
6. Like in 5-A, multiple lab partners can use the same Iworx file. Just click the red "Rec" button again and let a good 20 seconds of flat line go by before you click the black "Stop" button between each student.
7. Once all lab pairs have made their Auditory Cues recording, repeat Steps #9-10of 5-Ato analyze the data. Be sure to report the average of the ten auditory trials to the lab instructor.
8. Discuss the class results for both 5-A and 5-B. Does your lab show a normal bell-shaped curve? Why or why not? What accounts for the diversity seen in reaction times?

5-C

1. For prompted auditory cues, repeat the procedures for 5-B on the previous page, but add an additional step. While still clicking the Event Marker button next to the subject's ear at irregular intervals, this time for each of the ten trials, give one word warning just before the click is about to happen. For example, the lab partner could say, "Soon" then click; wait 5 seconds, then say "Soon" then click; wait 7 seconds, then say "Soon" then click, and so on for ten trials.
2. For predicted auditory cues, repeat the procedures for 5-B on the previous page, but alter Step 4. While still clicking the Event Marker button next to the subject's ear, this time for each of the ten trials, the lab partner should click the Event Marker button at regular intervals every five seconds.
3. Compare these classroom results with that from 5-B. Were the times generally shorter? Were the results for 5-C generated by the reflexes alone or could have higher cognitive functions/behaviors (such as anticipation or even simply having good rhythm) influenced the reaction times? Were there any invalid results in the class (e.g., the subject actually pressed the "Enter" key before the cue was given

Results



Discussion

With this experience I noticed that the visuals were more off the then audio. We responded more faster with the audio. The visual information is heavily processed therefore making its way a longer tree to processes than auditory. When doing the experiment I noticed that my partner responded faster when it was through auditory then visual and I responded faster to visual then auditory.

Conclusion

In conclusion, the auditory responds were slower than the visual responds. I was able to see in the first page the EEG patterns when a person is awake resting vs when active. We were also able to see when a person in deep sleep the waves are more spaced out and bigger. I noticed from the images that when a person is more active or the more brain activity the smaller and fast the waves stimuli. I was also able to see how the Em-100 is connected and how fast our brain react to a visual vs a audio.