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Many studies have been conducted that have tried to show what heritable traits influence a individual to become right- or left-handed. Studies have greatly conflicted with each other. For example, one study showed that two percent of the children of two right-handed parents were left-handed while another study found that eighty-four percent of all left-handed individuals had two right-handed parents. Scientists believe that hand dominance is probably influenced by several genes, as well as many environmental factors. Others believe that too much testosterone in a developing fetus causes the left brain to develop more slowly than the right, which would explain why there are more left-handed males than females. Whatever the reasons for handedness, it is obvious that there is quite possibly more than one factor involved.

What is the significance of cerebral dominance? Although the two hemispheres appear symmetrical, their functions are obviously not equally divided. The two hemispheres have quite different characteristics, or have specialized. Below is a list of skills associated in typical hemispheric specialization.

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| Left Hemisphere | Right Hemisphere |
| handwriting symbols | haptic awareness |
| language | spatial relationships |
| reading | shapes and patterns |
| phonics | mathematical computation |
| locating details and facts | color sensitivity |
| talking and reciting | singing and music |
| following directions | art expression |
| listening | creativity |
| auditory association | visualization |
|  | feelings and emotions |

Scientists disagree as to when specialization occurs in a individual. Some believe it begins around age four and is completed around age five. Some believe it is genetically determined before birth. Others believe it is controlled by one's environment and complete by puberty.

Whatever the case, specialization and dominance of cerebral hemispheres play large roles in determining which skills in an individual are strong. While some individuals have the ability to communicate well through verbal speech, as well as through written speech, others have difficulty wording phrases or speaking in sequential or logical sentences. Individuals with good verbal and logic skills most likely have a dominant left hemisphere. Some individuals are more capable of emotional and artistic expression such as music, painting, drawing, sculpting, and decorating, while others have little or no creative tendencies. Individuals who have special abilities that allow for artistic expression are most likely right-brained. Individuals with language centers in their right hemispheres sometimes struggle to become literate because the ability to understand the sequence and the relationship between phonetic sounds and words is located in the other hemisphere.

How does this specialization apply to musicians? Musicians must use both the artistic and emotional senses of the right hemisphere in collaboration with the language aspects, such as writing and reading, of the left hemisphere. While the right hemisphere is not limited by words or order and is free to create, the left hemisphere must be used to transcribe the free ideas into a form to be communicated, in the case of composing music. At the same time, a musician must be able to read a sheet of music and transform it into something emotional and artistic. In a sense, musicians are very whole-brained, although all individuals have a nerve fiber between their two cerebral hemispheres called the corpus callosum which allows communication between the two hemispheres. It certainly would seem that musicians may have less of a degree of dominance of a particular hemisphere due to their development of skills on both sides of the brain.

Some musicians have an ability known as perfect pitch or absolute pitch. It occurs in as few as one out of 100,000 musicians. They are able to recognize pitches without using any aid (such as another named pitch to relate the first pitch to or an instrument to reproduce the sound) and accurately name them (E flat, C natural, F sharp, etc). Most of these individuals began musical training before the age of seven. Recently, neurologists have discovered a physiological difference in the brains of musicians with perfect pitch. They have a larger planum temporale on the left side of the brain than the right, which are the centers for processing sound signals. Obviously, music is processed on both sides of the brain. Scientists believe that the enlargement occurs on the individual's left side because perfect pitch entails the ability to verbally state the pitch's name.

Since musicianship seems to involve both hemispheres of the cerebral cortex, it would seem logical that individuals with musical training would have both the well-developed skills associated with learning to use language as well as have skills such as spatial awareness, sensitivity to patterns and shapes, and mathematical computation associated with learning mathematics. This might influence a musician trained from childhood to excel equally in an English class as in a math class.

The order in which a child learns to develop either side of the brain might also affect this. Learning to read before receiving any musical training might influence a child to become more left-brain dominant than a child who did not. In the same light, a child who began musical training before he began to read might not have equal dominance between his hemispheres.

Quite possibly, the cerebral dominances of a musician's parents might also affect his level of dominance. Assuming that most right-handed individuals have dominant left hemispheres, a musician with two right-handed parents might have a higher degree of dominance than a musician with both a left-handed and right-handed parent. (Left-handed individuals have an equal chance of having either hemisphere become dominant.) By this notion, it is possible that a child of two right-handed parents might not have the dual abilities of the child with a right-handed parent and a left-handed parent, and therefore would have dissimilar abilities in English and math.

With these ideas in mind, an experiment that would show a relationship between a group of young musicians' degrees of dominance, their parents' dominant phenotypes, and the academic subjects in which the musicians excel was conducted.