Charleston neurologist explores nuances of ‘handedness’

Are you really left-handed or right-handed?

By Ben Calwell
bcalwell@cnpapers.com
304-348-5188

Why should anyone care that 200 years ago an astronomer’s assistant lost his job because he was too slow in recording the journey of stars across a telescope’s viewfinder?

It has to do with delayed reaction times and how that relates to being left-handed or right-handed, according to Dr. Iraj Derakhshan, a Charleston neurologist, who has published a number of peer-reviewed articles in medical journals on the topic, most recently in the journal “Cortex.”

Derakhshan of Charleston says one in five people really have a dominant hand other than what they think they have.

“One in five think they are right- or left-handed, when they are the opposite,” he said.

Which gets back to that astronomer’s assistant 200 years ago. His name was David Kinnebrook, and his boss, Royal Astronomer Nevil Maskelyne, fired him because Kinnebrook consistently marked the transit time of stars across a telescope’s viewfinder slower than did Maskelyne.

This year marks the 200th anniversary of Maskelyne’s death. Maskelyne served as the royal astronomer for 46 years, Derakhshan said.

A recent article in the United Kingdom’s “The Guardian” describes how Maskelyne discovered that his assistant’s “observations lagged behind his.”

This was an important discrepancy, because ships at sea used the data compiled at the observatory in Greenwich, England, to help them navigate.

Kinnebrook was 500 to 800 milliseconds late in his reaction times in marking the times of the stars as compared to Maskelyne’s marking times.

As measured against a clock, “500 milliseconds equals about a quarter-mile error at the equator,” Derakhshan said.

“Many ships had run aground, with thousands of lives lost as a result of not knowing their exact position vis-a-vis a land mass. Accurate timing, therefore, was of vital importance in knowing one’s position at the sea, Greenwich Mean Time corresponding to longitude zero.”

Derakhshan said Kinnebrook’s delay in jotting down the position of stars was most likely because he wasn’t really right-handed (as Maskelyne was) and therefore delayed in catching a glimpse of the stars as they appeared on his right visual field.

As a “fake” right-hander, this would have made Kinnebrook late in moving his eyes to his right to see stars entering the viewfinder.

“Not everybody who claims to be a right-hander is in fact a right-hander. Twenty percent of right-handers and 50 percent of left-handers or ambidextrous persons are wired in the opposite.”

The issue of “handedness” comes into play in everyday life, Derakhshan said, whether it’s sports, music or engaging in other daily tasks.

“These events may be visual, as when participating in dueling sports, such as fencing, or playing video games, or when playing musical instruments, such as a clarinet, piano or violin, or dressing ourselves,” he said.

“Men’s shirts are buttoned left over right side for this reason — a vast majority of people are right-handed, with that hand coming closer to the trunk compared to left hand — but women’s are in the opposite by convention.”

When it comes to being right-handed or left-handed, some people think they are wired for one, when in fact, they are really wired for the other.

“Fully 20 percent of people are not wired the way they think they are and therefore cannot become a concert pianist or violinist or boxer or fencer because they are not holding the respective instruments properly when compared to those who are doing so properly.”

He said a simple paper and pencil test, devised by Derakhshan, could determine whether a person is really left-handed or right-handed.

“The faster a parent realizes this phenomenon, the earlier they can remedy the problem,” he said.

People might adopt the “wrong” dominant hand for a couple of reasons, Derakhshan said.

“In normal circumstances, this comes about mostly because of imitating a loved one at an early age, or because of parental or societal coercion to force a child in adopting a favorite hand opposite of which nature has ordered for that child,” he said.

Derakhshan said it is a “half-truth” that the left hemisphere of the brain controls the right side and that the right hemisphere controls the left.

“The truth is that one side (of the brain) controls both sides of the body. For example, for a right-handed person, who relies on the left hemisphere, to move his or her left hand, the command for moving the left hand is also issued in the left hemisphere.”

But the signal for moving the left hand must first travel through the “corpus callosum,” a large pathway from the left hemisphere, to reach the right hemisphere, which then implements the command.

“That’s where the delay on the left comes from,” Derakhshan said.

“Our conscious element, our decision-making element, is located in one hemisphere, not in both — that’s what I discovered.”

Derakhshan said he first realized the issue as a neurologist in 1981.

“I researched and contemplated the issue for the next 20 years and began to write about it since 2001.”