

The Butterfly Effect

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Author's note: Each patient education article in this column details research documented in *Somatovisceral Aspects of Chiropractic: An Evidence-Based Approach*, co-edited by Marion Todres-Masarsky, DC.

As full-time practitioners in the northern Virginia suburbs of Washington, D.C., my partner and I deal with a very skeptical population. The idea that the effects of a chiropractic adjustment may extend beyond the individual patient and benefit the wider community usually seems like mushy metaphysics and softheaded speculation to patients. New research on the relationship between subluxation and reaction time allows us to explore this topic from a base of solid science. The following patient education article is intended to make a start in that direction. Please feel free to use it for bulletin board display, front-desk handout, lay lectures or tableside talks.

Over the years, a number of studies have demonstrated that chiropractic adjustments may speed up reaction time.^{1,2,3} These findings have recently been buttressed by a new study.

A published report by a university-based research group from New Zealand studied reaction time in people with misalignments or restrictions (subluxations) in the part of the spine located in the neck (cervical spine).⁴ Based on a standardized chiropractic examination, the volunteer subjects were divided into two groups: those people with only one cervical subluxation and those with two such subluxations. The overall results of a battery of reaction-time tasks demonstrated that people with two subluxations were significantly slower than those with one. Interestingly, the more complex the task, the greater the difference in reaction time between groups.

For example, in a task called "simple reaction time," the subject was asked to press the letter "J" on a computer keyboard as soon as possible whenever a crosshair symbol appeared on the computer screen. In this simple task, the reaction time did not differ much between groups.

However, when performing the same task while the subject simultaneously tracked a moving target on the same screen (a task called "probe reaction time"), the group with one subluxation was approximately 5/100 of a second faster than the group with two subluxations - a statistically significant difference.

The significance in that difference of 5/100 of a second may not be immediately apparent. It's at least as brief as the moment it takes for a butterfly to flap its wings. However, a relatively new area of science and mathematics - chaos theory - holds that under certain circumstances, a very slight difference in the way a process begins can make a huge difference in the way that process concludes. For example, meteorologists familiar with chaos theory are fond of saying that under certain

circumstances, a butterfly can flap its wings in the Indian Ocean and cause a hurricane in the Caribbean Sea.^{5,6}

The application of this "butterfly effect" to your life becomes apparent when you consider what happens after you leave the chiropractor's office. After your adjustment, you probably will drive home (or to work, or to complete an errand, etc.). Perhaps your improved reaction time will enable you to avoid an accident by responding just quickly enough to a hazard on the road. If you were only 5/100 of a second slower, the accident would have happened, and people other than yourself would have been hurt. These people will never know that your choice to get a chiropractic adjustment protected their safety as well as your own.

A slight tuneup of your reaction time - as subtle as the flap of a butterfly's wings - may be sending beneficial ripple effects well beyond the walls of your chiropractor's office.

References

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